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 NEWS  1         Web Page URLs for STN Seminar Schedule - N. America
 NEWS  2         "Ask CAS" for self-help around the clock
 NEWS  3  May 12  EXTEND option available in structure searching
 NEWS  4  May 12  Polymer links for the POLYLINK command completed in REGISTRY
 NEWS  5  May 27  New UPM (Update Code Maximum) field for more efficient patent
                  SDIs in CAplus
 NEWS  6  May 27  CAplus super roles and document types searchable in REGISTRY
 NEWS  7  Jun 28  Additional enzyme-catalyzed reactions added to CASREACT
 NEWS  8  Jun 28  ANTE, AQUALINE, BIOENG, CIVILENG, ENVIROENG, MECHENG,
                  and WATER from CSA now available on STN(R)
 NEWS  9  Jul 12  BEILSTEIN enhanced with new display and select options,
                  resulting in a closer connection to BABS
 NEWS 10  Jul 30  BEILSTEIN on STN workshop to be held August 24 in conjunction
                  with the 228th ACS National Meeting
 NEWS 11  AUG 02  IFIPAT/IFIUDB/IFICDB reloaded with new search and display
                  fields
 NEWS 12  AUG 02  CAplus and CA patent records enhanced with European and Japan
                  Patent Office Classifications
 NEWS 13  AUG 02  STN User Update to be held August 22 in conjunction with the
                  228th ACS National Meeting
 NEWS 14  AUG 02  The Analysis Edition of STN Express with Discover!
                  (Version 7.01 for Windows) now available
 NEWS 15  AUG 04  Pricing for the Save Answers for SciFinder Wizard within
                  STN Express with Discover! will change September 1, 2004
 NEWS 16  AUG 27  BIOCOMMERCE: Changes and enhancements to content coverage
 NEWS 17  AUG 27  BIOTECHABS/BIOTECHDS: Two new display fields added for legal
                  status data from INPADOC
 NEWS 18  SEP 01  INPADOC: New family current-awareness alert (SDI) available
 NEWS 19  SEP 01  New pricing for the Save Answers for SciFinder Wizard within
                  STN Express with Discover!
 NEWS 20  SEP 01  New display format, HITSTR, available in WPIDS/WPINDEX/WPIX

 NEWS EXPRESS  JULY 30 CURRENT WINDOWS VERSION IS V7.01, CURRENT
               MACINTOSH VERSION IS V6.0c(ENG) AND V6.0Jc(JP),
               AND CURRENT DISCOVER FILE IS DATED 11 AUGUST 2004
 NEWS HOURS    STN Operating Hours Plus Help Desk Availability
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FILE COVERS 1907 - 14 Sep 2004 VOL 141 ISS 12
FILE LAST UPDATED: 13 Sep 2004 (20040913/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

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=> s  (ecological or smokeless) (P) coal
           9916 ECOLOGICAL
              4 ECOLOGICALS
           9918 ECOLOGICAL
                  (ECOLOGICAL OR ECOLOGICALS)
          34118 ECOL
              1 ECOLS
          34119 ECOL
                  (ECOL OR ECOLS)
          38406 ECOLOGICAL
                  (ECOLOGICAL OR ECOL)
           2552 SMOKELESS
         209512 COAL
          35522 COALS
         211340 COAL
                  (COAL OR COALS)
L1         1238 (ECOLOGICAL OR SMOKELESS) (P) COAL

=> s l1 and carbonate
         252133 CARBONATE
          62405 CARBONATES
         282963 CARBONATE
                  (CARBONATE OR CARBONATES)
L2           19 L1 AND CARBONATE

=> d l2 1-19 all

L2   ANSWER 1 OF 19  CAPLUS  COPYRIGHT 2004 ACS on STN
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Full Text | Citing References

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AN   2004:191307  CAPLUS
DN   141:9413
ED   Entered STN:  10 Mar 2004
TI   Basic physicochemical principles of heat treatment of sulfur-containing
     wastes from coal mining and beneficiation
AU   Shpirt, M. Ya.; Goryunova, N. P.; Zil'bershmidt, M. G.; Samuilov, E. V.;
     Goryunova, E. V.
CS   Inst. Goryuchikh Iskopayemykh, Russia
SO   Khimiya Tverdogo Topliva (Moscow, Russian Federation) (2004), (1), 64-80
     CODEN: KTVTBY; ISSN: 0023-1177
PB   Nauka
DT   Journal
LA   Russian
CC   51-19 (Fossil Fuels, Derivatives, and Related Products)
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Section cross-reference(s): 59, 60, 61

AB It is shown (for the example of mining waste and waste from beneficiation of brown **coal** from the Podmoskov Basin) that storage and disposal of sulfur-contg. **coal** mining waste (enrichment) may be accompanied by unfavorable effects on the surrounding environment (increases levels of toxic oxides and **ecol**. dangerous substances in the atm. and groundwater-sulfuric acid, aluminum compds., iron, arsenic, manganese, chromium, zinc, nickel, and others). Thermodn. modeling and exptl. investigations on the heat treatment of waste streams without additives were studied and the results are presented. It is shown that certain conditions with more than 90% sulfur, contained in the model, can be transferred in the gas phase from appearing a mixt. of SO2 and SO3, but in the solid state can be received in iron compds., which can be sepd. and removed magnetically. Compns. and elemental distribution between phases depends upon both the temp. of reaction and the oxygen level in the gas/air feed. Implications and ways of dealing with the technol. dangers of the processes, practical characteristics of the liq. and solid streams are also given, in terms of concns. of sulfuric acid, iron (>50% in the form of Fe2O3), aluminum sulfate and sulfur.

ST heat treatment sulfur waste coal mining beneficiation pollution control

IT Filtration
Heat treatment
Magnetic separation
Neutralization
Oxidation
Thermodynamic simulation
(basic physicochem. principles of heat treatment of sulfur-contg. wastes from coal mining and beneficiation)

IT Sulfates, properties
RL: FMU (Formation, unclassified); OCU (Occurrence, unclassified); PRP (Properties); FORM (Formation, nonpreparative); OCCU (Occurrence)
(basic physicochem. principles of heat treatment of sulfur-contg. wastes from coal mining and beneficiation)

IT **Carbonates,** reactions
Oxides (inorganic), reactions
RL: FMU (Formation, unclassified); OCU (Occurrence, unclassified); PRP (Properties); RCT (Reactant); FORM (Formation, nonpreparative); OCCU (Occurrence); RACT (Reactant or reagent)
(basic physicochem. principles of heat treatment of sulfur-contg. wastes from coal mining and beneficiation)

IT Sulfides, reactions
Trace metals
RL: OCU (Occurrence, unclassified); POL (Pollutant); RCT (Reactant); OCCU (Occurrence); RACT (Reactant or reagent)
(basic physicochem. principles of heat treatment of sulfur-contg. wastes from coal mining and beneficiation)

IT Coal treatment
(cleaning, wastes; basic physicochem. principles of heat treatment of sulfur-contg. wastes from coal mining and beneficiation)

IT Solid wastes
(coal washing; basic physicochem. principles of heat treatment of sulfur-contg. wastes from coal mining and beneficiation)

IT Mining
(coal, waste from; basic physicochem. principles of heat treatment of sulfur-contg. wastes from coal mining and beneficiation)

IT Solid wastes
(mine, coal mines; basic physicochem. principles of heat treatment of sulfur-contg. wastes from coal mining and beneficiation)

IT Toxicity
(of waste materials; basic physicochem. principles of heat treatment of sulfur-contg. wastes from coal mining and beneficiation)

IT 7429-90-5D, Aluminum, compds. 7439-96-5D, Manganese, compds. 7440-02-0D, Nickel, compds. 7440-38-2D, Arsenic, compds. 7440-47-3D, Chromium, compds. 7440-66-6D, Zinc, compds.

RL: FMU (Formation, unclassified); OCU (Occurrence, unclassified); POL (Pollutant); PRP (Properties); RCT (Reactant); FORM (Formation, nonpreparative); OCCU (Occurrence); RACT (Reactant or reagent)
(basic physicochem. principles of heat treatment of sulfur-contg. wastes from coal mining and beneficiation)

IT 1309-37-1, Ferric oxide, reactions 7439-89-6D, Iron, compds.
RL: FMU (Formation, unclassified); OCU (Occurrence, unclassified); PRP (Properties); RCT (Reactant); FORM (Formation, nonpreparative); OCCU (Occurrence); RACT (Reactant or reagent)
(basic physicochem. principles of heat treatment of sulfur-contg. wastes from coal mining and beneficiation)

IT 10043-01-3, Aluminum sulfate
RL: FMU (Formation, unclassified); POL (Pollutant); FORM (Formation, nonpreparative); OCCU (Occurrence)
(basic physicochem. principles of heat treatment of sulfur-contg. wastes from coal mining and beneficiation)

IT 7664-93-9, Sulfuric acid, properties
RL: FMU (Formation, unclassified); POL (Pollutant); PRP (Properties); FORM (Formation, nonpreparative); OCCU (Occurrence)
(basic physicochem. principles of heat treatment of sulfur-contg. wastes from coal mining and beneficiation)

IT 1305-78-8, Calcium oxide, reactions 1309-48-4, Magnesium oxide, reactions 1344-28-1, Alumina, reactions 7631-86-9, Silica, reactions
RL: OCU (Occurrence, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); RCT (Reactant); OCCU (Occurrence); PROC (Process); RACT (Reactant or reagent)
(basic physicochem. principles of heat treatment of sulfur-contg. wastes from coal mining and beneficiation)

L2 ANSWER 2 OF 19 CAPLUS COPYRIGHT 2004 ACS on STN

Full Text | Citing References

AN 2003:810150 CAPLUS
DN 139:278831
ED Entered STN: 16 Oct 2003
TI Ecologically friendly fuel and its production
IN Macho, Vendelin; Bakos, Dusan; Bajus, Martin; Cicmanec, Peter; Boroska, Fedor; Zatko, Ludovit; Komora, Ladislav
PA Hornonitrianske Bane Prievidza, A. S., Slovakia; Chemickotechnologicka Fakulta STU
SO Slovakia, 7 pp.
CODEN: SLXXFO
DT Patent
LA Slovak
IC ICM C10L009-10
ICS C10L010-00; C10L005-16; B01D053-34
CC 51-12 (Fossil Fuels, Derivatives, and Related Products)
Section cross-reference(s): 52, 59
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	SK 282533	B6	20021008	SK 1995-870	19950706
PRAI	SK 1995-870		19950706		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
SK 282533	ICM	C10L009-10
	ICS	C10L010-00; C10L005-16; B01D053-34

AB The solid, semisolid, and/or liq. fuel having a calorific value of 8-42 MJ/kg and contg. 0.1-6 wt.% free and/or bonded S and optional As is mixed with 50-800% excess Ca and/or Mg in the form of ≥1 compd. which can react with SO2 and/or SO3 at 300-1,200°. The Ca- and/or Mg-contg. additives are added to the fuel prior and/or during combustion. Amt. of the additives in the fuel is 0.5-30 wt.%.

ST ecol friendly fuel prodn; nonpolluting fuel prodn
IT Lime (chemical)
Limestone, uses
RL: MOA (Modifier or additive use); USES (Uses)
(additive for bonding of sulfur and arsenic in prepn. of ecol. friendly fuel)
IT Bark
Coal slurries
Fuel briquets
Fuel oil
Peat
Petroleum refining residues
Sawdust
Soot
Straw
(bonding of sulfur and arsenic compds. in prepn. of **ecol.** friendly fuel from)
IT Anthracite
Asphalt
Asphaltenes
Bitumens
Brown **coal**
Coal, processes
Coke
Lignite
Petroleum coke
Semicoke
Tar
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(bonding of sulfur and arsenic compds. in prepn. of **ecol.** friendly fuel from)
IT Carboxylic acids, uses
RL: MOA (Modifier or additive use); USES (Uses)
(calcium salts; additive for bonding of sulfur and arsenic in prepn. of ecol. friendly fuel)
IT Air pollution
(control; bonding of sulfur and arsenic compds. in prepn. of ecol. friendly fuel)
IT Petroleum products
(fractions; bonding of sulfur and arsenic compds. in prepn. of ecol. friendly fuel from)
IT Surfactants
(in bonding of sulfur and arsenic compds. in prepn. of ecol. friendly fuels)
IT Carboxylic acids, uses
RL: MOA (Modifier or additive use); USES (Uses)
(magnesium salts; additive for bonding of sulfur and arsenic in prepn. of ecol. friendly fuel)
IT Polymers, processes
Rubber, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(waste; bonding of sulfur and arsenic compds. in prepn. of ecol. friendly fuel from)
IT 471-34-1, Calcium **carbonate**, uses 546-93-0, Magnesium **carbonate** 1305-62-0, Calcium hydroxide, uses 1305-78-8, Calcium oxide, uses 1309-42-8, Magnesium hydroxide 1309-48-4, Magnesium oxide, uses 7000-29-5, Calcium magnesium **carbonate** 7439-95-4D, Magnesium, alcoholate or phenolate 7440-70-2D, Calcium, alcoholate or phenolate 13717-00-5, Magnesite 16389-88-1, Dolomite, uses 27576-86-9D, Cumylphenol, calcium salt
RL: MOA (Modifier or additive use); USES (Uses)
(additive for bonding of sulfur and arsenic in prepn. of ecol. friendly

fuel)
IT 9016-45-9, Polyethylene glycol nonylphenyl ether
RL: MOA (Modifier or additive use); USES (Uses)
(surfactant in bonding of sulfur and arsenic compds. in prepn. of ecol. friendly fuels)
IT 9003-07-0, Polypropylene
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(waste; bonding of sulfur and arsenic compds. in prepn. of ecol. friendly fuel from)

L2 ANSWER 3 OF 19 CAPLUS
Full Text | Citing References
AN 2003:467234 CAPLUS
DN 139:105161
ED Entered STN: 19 Jun 2003
TI Method of production of components of cement-free hydraulic binder
IN Shchukin, V. S.
PA Ukraine
SO Russ., No pp. given
CODEN: RUXXE7
DT Patent
LA Russian
IC ICM C04B007-44
CC 58-3 (Cement, Concrete, and Related Building Materials)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	RU 2200137	C2	20030310	RU 2000-118835	20000718
PRAI	UA 1999-116166	A	19991111		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
RU 2200137	ICM	C04B007-44

AB The method includes prepn. of raw material mixt. contg. SiO_2, CaO, MgO, Al_2O_3, FeO, and Fe_2O_3 followed by heat treatment, melting, cooling, and grinding of product thus obtained. Content of said oxides in the raw material mixt. is ≥70%; heat treatment is performed in presence of reducing agent by heating to 1300-500°, after which the melt is heated to 1800° and iron-contg. product is sepd.; then, the melt is cooled, and grinding of the product is performed after granulation of the melt; oxides contained in the granulate have the following ratios: $(CaO+MgO)/SiO_2 = 0.5-1.7$, and $Al_2O_3/SiO_2 = 0.3-0.6$. Water in the amt. of 30-35 wt.% is added to ground product. Granulation of the melt is performed by cooling it with natural gas; gas formed after granulation of the melt is used as reductant. Wastes of **coal** processing or low-grade **coal** may also be used as reducing agents. Ground product may be addnl. mixed with finely-dispersed filler at ratio of 1 : (0.1-2). Ash-and-slag wastes of thermal power plants, **coal** fly ash from thermal power plants and red mud of silica prodn. may be used as finely-dispersed filler. Solns. of NaOH, KOH, Na_2CO_3, Na_2SO_3, K_2SO_3, and/or $CaSO_3$ may be added to mixt. in the amt. of 2-10 wt.%. The method provides decrease of energy consumption, improved quality of the product, and enhanced **ecol.** safety.
ST fly ash coal lime waste recycling
IT Red mud (bauxite processing residue)
(additive of cement-free binder; method of prodn. of components of cement-free hydraulic binder)
IT Recycling
(ash and slag wastes; method of prodn. of components of cement-free hydraulic binder)
IT Ashes (residues)
(coal fly; method of prodn. of components of cement-free hydraulic binder)

IT Lime (chemical)
RL: TEM (Technical or engineered material use); USES (Uses)
(hydraulic binder component; method of prodn. of components of cement-free hydraulic binder)
IT Binders
(hydraulic, cement-free; method of prodn. of components of cement-free hydraulic binder)
IT 497-19-8, Sodium **carbonate** (Na2CO3), uses 1310-58-3, Potassium hydroxide (KOH), uses 1310-73-2, Sodium hydroxide (NaOH), uses 7757-83-7, Sodium sulfite (Na2SO3) 10117-38-1, Potassium sulfite (K2SO3) 10257-55-3, Calcium sulfite (CaSO3)
RL: TEM (Technical or engineered material use); USES (Uses)
(additive of cement-free binder; method of prodn. of components of cement-free hydraulic binder)

L2 ANSWER 4 OF 19 CAPLUS COPYRIGHT 2004 ACS on STN

Full Text | Citing References

AN 2003:431338 CAPLUS
DN 139:296259
ED Entered STN: 05 Jun 2003
TI Comparison of Asian clam field bioassays and benthic community surveys in quantifying effects of a coal-fired power plant effluent on Clinch River biota
AU Hull, M. S.; Cherry, D. S.; Soucek, D. J.; Currie, R. J.; Neves, R. J.
CS Department of Biology, Virginia Polytechnic Institute and State University, Blacksburg, VA, USA
SO Journal of Aquatic Ecosystem Stress and Recovery (2002), 9(4), 271-283
CODEN: JASRF9; ISSN: 1386-1980
PB Kluwer Academic Publishers
DT Journal
LA English
CC 61-2 (Water)
Section cross-reference(s): 12, 51, 60
AB Asian clam Survival and growth may be more sensitive endpoints than benthic macroinvertebrate community richness parameters at distinguishing biotic impairment attributable to complex effluent from **coal**-burning utilities. Field bioassays were performed with the Asian clam, Corbicula fluminea, 2000-2002, and rapid bioassessments of benthic macroinvertebrate communities, 2000-2001, at sites upstream and downstream of the American Elec. Power (AEP) Clinch River Plant (CRP) in Russell County, Virginia. Survival and growth of transplanted C. fluminea were significantly impaired within the CRP effluent plume (avs. of 35% and 0.21 mm, resp.) relative to all other study sites within the Clinch River (avs. of 89% and 1.58 mm). Conversely, richness metrics for Ephemeroptera, Ephemeroptera-Plecoptera-Trichoptera (EPT), and total taxa were not reduced downstream from the CRP; however, relative abundance metrics for Ephemeroptera and EPT were minimally reduced at the CRP-affected site in 2000-01. Results suggested that richness metrics for benthic macroinvertebrate communities may be inadequate to assess the effect of complex industrial wastewater on C. fluminea. Results have implications for bioassessment methods used to monitor streams inhabited by imperiled freshwater mussels because C. fluminea and Unionoidea are **ecol.** similar and recent findings suggested certain Unionidae genera may be more sensitive than C. fluminea.
ST water pollution coal fired power effluent Clinch River Virginia; Asian clam field bioassay river pollution power generation effluent; benthic macroinvertebrate community survey river pollution power generation effluent; survival growth Asain clam polluted water Clinch River
IT Alkalinity
Benthic organisms
Corbicula fluminea
Electric conductivity
Ephemeroptera

Plecoptera
Temperature
Trichoptera
(Asian clam field bioassays vs. benthic macroinvertebrate community surveys to quantify coal-fired power generation effluent effect on aquatic biota, Clinch River, Virginia)
IT Bioassay
(Asian clam field; Asian clam field bioassays vs. benthic macroinvertebrate community surveys to quantify coal-fired power generation effluent effect on aquatic biota, Clinch River, Virginia)
IT Growth, animal
(Asian clam survival and; Asian clam field bioassays vs. benthic macroinvertebrate community surveys to quantify coal-fired power generation effluent effect on aquatic biota, Clinch River, Virginia)
IT Biota (**ecological** unit)
(biodiversity, unionoid; Asian clam field bioassays vs. benthic macroinvertebrate community surveys to quantify **coal**-fired power generation effluent effect on aquatic biota, Clinch River, Virginia)
IT Power
(coal-fired generation of; Asian clam field bioassays vs. benthic macroinvertebrate community surveys to quantify coal-fired power generation effluent effect on aquatic biota, Clinch River, Virginia)
IT Landfill leachate
(coal-fired power generation fly ash; Asian clam field bioassays vs. benthic macroinvertebrate community surveys to quantify coal-fired power generation effluent effect on aquatic biota, Clinch River, Virginia)
IT Toxicity
(power generation effluent; Asian clam field bioassays vs. benthic macroinvertebrate community surveys to quantify coal-fired power generation effluent effect on aquatic biota, Clinch River, Virginia)
IT Coal, uses
RL: NUU (Other use, unclassified); USES (Uses)
(power generation from combustion of; Asian clam field bioassays vs. benthic macroinvertebrate community surveys to quantify coal-fired power generation effluent effect on aquatic biota, Clinch River, Virginia)
IT Water pollution
(river water; Asian clam field bioassays vs. benthic macroinvertebrate community surveys to quantify coal-fired power generation effluent effect on aquatic biota, Clinch River, Virginia)
IT 7782-44-7, Oxygen, occurrence 12408-02-5, Hydrogen ion, occurrence
RL: OCU (Occurrence, unclassified); OCCU (Occurrence)
(Asian clam field bioassays vs. benthic macroinvertebrate community surveys to quantify coal-fired power generation effluent effect on aquatic biota, Clinch River, Virginia)
IT 471-34-1, Calcium **carbonate**, occurrence
RL: OCU (Occurrence, unclassified); OCCU (Occurrence)
(hardness as; Asian clam field bioassays vs. benthic macroinvertebrate community surveys to quantify coal-fired power generation effluent effect on aquatic biota, Clinch River, Virginia)
RE.CNT 65 THERE ARE 65 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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(64) Winner, R; Can J Fish Aquat Sci 1980, V37, P647 CAPLUS
(65) Zheng, H; Biol Bull Mar Biol Lab 1998, V194, P161 CAPLUS

L2 ANSWER 5 OF 19 CAPLUS COPYRIGHT 2004 ACS on STN

Full Text | Citing References

AN 2002:878666 CAPLUS
DN 138:109815
ED Entered STN: 20 Nov 2002
TI New data on the geology, mineral resources and geo-ecology of Franz-Josef Land Archipelago
AU Makar'ev, A. A.; Makar'eva, E. M.; Kosteva, N. N.
CS Russia
SO Razvedka i Okhrana Nedr (2002), (9), 23-27
CODEN: RZONAV; ISSN: 0034-026X
PB Nedra
DT Journal
LA Russian
CC 53-12 (Mineralogical and Geological Chemistry)
Section cross-reference(s): 19, 51
AB Geol., islands of the Franz-Josef Land Archipelago have a basement that includes folded Vendian rocks and Carboniferous **coal**-bearing clastic and **carbonate** rocks, and is overlain by Mesozoic sedimentary rocks of a platform cover. Trap formations are widespread: dikes, sills, and stocks of gabbro and gabbro-diorite; necks of microdolerites and hyalobasalts; basalt and andesitic-basalt lavas, and their tuffs and tuff-lavas. In chem. compn. all of the igneous rocks belong to basic normal series with sodic and sodic-potassic alky. In comparison to the clarke values for basic igneous rocks, the av. contents of Ga, Sn, Mo, V, Cu, Zn, Zr, and Ce are higher and those of Cr, Nb, Ag, Sr, and Sc are lower. The known mineral resources include bituminous **coal**, bituminous rocks, siallite, and stone of com. value. At storage sites of fuels and lubricants the soils are polluted by petroleum products. Also, soils and moss have 137Cs $\leq$ 352 and $\leq$ 350 Bq/kg, resp., and 60Co $\leq$ 60 and $\leq$ 115 Bq/kg, resp. In the waters adjacent to the archipelago the Quaternary sediments are no more than 3-5 m thick, and the bottom sediments are **ecol**. undisturbed.
ST geol mineral resource geoecol Franz Josef Land Archipelago
IT Basalt
RL: GOC (Geological or astronomical occurrence); PRP (Properties); OCCU (Occurrence)
(andesitic; geol., mineral resources and geo-ecol. of Franz-Josef Land Archipelago, Russia)
IT Dikes
(basic; geol., mineral resources and geo-ecol. of Franz-Josef Land Archipelago, Russia)
IT Moss
Soil pollution
(cobalt-60 and cesium-137 in moss and soil, Franz-Josef Land Archipelago, Russia)
IT Trace elements, occurrence
RL: GOC (Geological or astronomical occurrence); GPR (Geological or astronomical process); OCCU (Occurrence); PROC (Process)
(geol. indicator, igneous rocks; in basic igneous rocks, of Franz-Josef Land Archipelago, Russia)
IT Basic magmatism
Geological sediments
(geol., mineral resources and geo-ecol. of Franz-Josef Land Archipelago, Russia)
IT **Coal**, occurrence
Nonmetal ores
Siallite

Tuff
RL: GOC (Geological or astronomical occurrence); OCCU (Occurrence)
(geol., mineral resources and geo-**ecol**. of Franz-Josef Land Archipelago, Russia)

IT Andesite
Basic igneous rocks
Diorite
Dolerite
Gabbro
Sedimentary rocks
RL: GOC (Geological or astronomical occurrence); PRP (Properties); OCCU (Occurrence)
(geol., mineral resources and geo-ecol. of Franz-Josef Land Archipelago, Russia)

IT Lava
RL: GOC (Geological or astronomical occurrence); PRP (Properties); OCCU (Occurrence)
(mafic; geol., mineral resources and geo-ecol. of Franz-Josef Land Archipelago, Russia)

IT Basic igneous rocks
Ultrabasic igneous rocks
RL: GOC (Geological or astronomical occurrence); PRP (Properties); OCCU (Occurrence)
(trap rock; geol., mineral resources and geo-ecol. of Franz-Josef Land Archipelago, Russia)

IT 10045-97-3, Cesium-137, occurrence 10198-40-0, Cobalt 60, occurrence
RL: POL (Pollutant); OCCU (Occurrence)
(in moss and soils; geol., mineral resources and geo-ecol. of Franz-Josef Land Archipelago, Russia)

L2 ANSWER 6 OF 19 CAPLUS COPYRIGHT 2004 ACS on STN

Full Text | Citing References

AN 2001:79098 CAPLUS
DN 134:256523
ED Entered STN: 04 Feb 2001
TI Development of environmentally benign scale inhibitors for industrial applications
AU Hater, Wolfgang; Mayer, Bernd; Schweinsberg, Matthias
CS Germany
SO PowerPlant Chemistry (2000), 2(12), 721-724, 752-755
CODEN: POCHFT; ISSN: 1438-5325
PB PowerPlant Chemistry GmbH
DT Journal
LA English
CC 61-6 (Water)
AB Polyaspartic acid and polysaccharide derivs. were used as starting materials for the development of an **ecol**. sound scale inhibitor. $BaSO_4$, $CaSO_4$, and $CaCO_3$ stabilization was tested and the results were compared with those of products based on phosphonic acids. Of all the inhibitors tested, only polyaspartates exhibit good scale inhibition against all 3 minerals, whereas phosphonates are completely ineffective against $CaSO_4$ and saccharides exhibit inferior inhibition against $BaSO_4$ scale. Two field tests on the application of inhibitors on the base of polyaspartates are described: $BaSO_4$ inhibition in **coal** mine drainage and $CaSO_4$ inhibition at a power station.
ST water scale inhibitor polyaspartate polysaccharide
IT Environmental pollution control
Scale inhibitors
(environmentally benign scale inhibitors for industrial applications)
IT Polysaccharides, processes
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(environmentally benign scale inhibitors for industrial applications

contg.)
IT 471-34-1, Calcium **carbonate**, processes 7727-43-7, Barium sulfate 7778-18-9, Calcium sulfate 25608-40-6, Polyaspartic acid
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(environmentally benign scale inhibitors for industrial applications contg.)
RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Fischer, K; Wat Res 1993, V27(3), P485 CAPLUS
(2) Gledhill, W; Handbook of Environmental Chemistry 1993, V3(Part F), P261
(3) Hater, W; Proc Corrosion/98 1998
(4) Held, S; Textilveredlung 1989, V24(11), P394 CAPLUS
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(8) Schoberl, P; Tenside Surfactants Detergents 1988, V25, P99
(9) Schweinsberg, M; Proc EUROCORR '99, to be printed
(10) Screening Information Data Set (SIDS); OECD Assessment Internat Reg of Potentially Toxic Chemicals 1996, V3, P439
(11) Steber, J; Chemie im Kraftwerk 1997 1997
(12) Steber, J; Chemosphere 1968, V15(7), P929

L2 ANSWER 7 OF 19 CAPLUS COPYRIGHT 2004 ACS on STN
Full Text | Citing References
AN 2000:660620 CAPLUS
DN 133:226892
ED Entered STN: 21 Sep 2000
TI Influence of addition of alkali metal compounds to calcium **carbonate** on desulfurization characteristics
AU Naruse, Ichiro; Saito, Katsuhiro; Murakami, Takahiro
CS Department of Ecological Engineering, Toyohashi University of Technology, Tempaku-cho, Toyohashi, 441-8580, Japan
SO Proceedings of the ASME/JSME Thermal Engineering Joint Conference, 5th, San Diego, CA, United States, Mar. 14-19, 1999 (1999), 1347-1353
Publisher: American Society of Mechanical Engineers, New York, N. Y.
CODEN: 69AEKP
DT Conference; (computer optical disk)
LA English
CC 59-4 (Air Pollution and Industrial Hygiene)
AB Acid rain has been recently involved as one of serious global environmental problems, esp. sulfur oxide (SOx) has been already recognized to be one of the greatest sources. Limestone is currently supplied as a desulfurizer into bubbling and circulating fluidized bed **coal** combustors since both combustors are operated at the temp. ranged from 1073 to 1173 K, where limestone can be calcined and sulfurized optimally. In the practical boilers, however, the limestone particles are fed to the combustor excessively since the utilization efficiency of CaO produced by the calcination of limestone is low. This phenomenon is caused by the plugging of pores due to CaSO4 formation. Thereafter, this operation causes the increase of ash vol. and then CO2 concn. in the atm. On the other hand, many kinds of sea-shell are clarified as one of industrial wastes, and also consist of CaCO3 similar to limestone. Therefore it would be possible for wasted sea-shell to be applied to one of the desulfurizers. In this case the CO2 produced by calcination of the shell is fixed and recycled naturally in obedience to the **ecol.** law. From this viewpoint, desulfurization characteristics of wasted sea shell have been already studied fundamentally by using a thermobalance as compared with the results obtained by limestone. As one of the main results in this study, the desulfurizaton efficiency for the shell attained a value of more than about 70%. For the limestone, on the other hand, it is less than 40%. It was also explained that the obtained result was caused by the difference of the pore size distribution of CaO between

limestone and sea-shell. In order to elucidate the reason of this big difference between the sea-shell and limestone, alkali metal compds. contained in the shell were removed by extg. in deionized water as well as chloride or **carbonate** compds. of alkali metals were phys. mixed with the limestone in this study. Both the extd. shell particles and the mixt. of limestone with alkali metal compds. were also tested by using the thermobalance to discuss the detailed role of alkali metal compds. in the sea-shell. In the case that alkali metal compds. are added to limestone, on the other hand, particles of the alkali compd. are phys. mixed with particles of limestone. NaCl, KCl, Na2CO3 and K2CO3 were used as the alkali metal compds. to compare the effect of chloride compd. with that of **carbonate** compd. The results obtained by this study are summarized as follows. I) The desulfurization activity for wasted sea-shell is much higher than that for limestone. Ii) Even if the alkali metal compds. are partially removed from the sea shell, the desulfurization efficiency does not change. Iii) The desulfurization activity can be enhanced by adding alkali metal compds. to limestone. Sodium compds. are more effective on the desulfurization efficiency than potassium compds. Sodium chloride is the best agent among them.

ST flue gas desulfurization seashell calcium **carbonate**

IT Flue gas desulfurization
Shell
(influence of addn. of alkali metal compds. to seashell-derived calcium **carbonate** on flue gas desulfurization characteristics)

IT 497-19-8, Sodium **carbonate**, uses 584-08-7, Potassium **carbonate** 7447-40-7, Potassium chloride, uses 7647-14-5, Sodium chloride, uses
RL: MOA (Modifier or additive use); USES (Uses)
(influence of addn. of alkali metal compds. to seashell-derived calcium **carbonate** on flue gas desulfurization characteristics)

IT 471-34-1, Calcium **carbonate**, uses
RL: NUU (Other use, unclassified); USES (Uses)
(influence of addn. of alkali metal compds. to seashell-derived calcium **carbonate** on flue gas desulfurization characteristics)

IT 7446-09-5, Sulfur dioxide, processes
RL: REM (Removal or disposal); PROC (Process)
(influence of addn. of alkali metal compds. to seashell-derived calcium **carbonate** on flue gas desulfurization characteristics)

RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

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(2) Hartman, M; Ind Eng Chem Process Des Dev 1974, V13(3), P248 CAPLUS
(3) Naruse, I; Kagaku Kogaku Ronbunshu 1995, V21(5), P904 CAPLUS

L2 ANSWER 8 OF 19 CAPLUS COPYRIGHT 2004 ACS on STN

Full Text | Citing References

AN 1999:219338 CAPLUS
DN 130:286582
ED Entered STN: 08 Apr 1999
TI **Ecological** impact produced by hard **coal** mining in Petrosani **coal** basin and pollution reduction at Jiu river
AU Arad, V.; Arad, S.; Marchis, Gh.
CS Petrosani University, Rom.
SO Environmental Issues and Waste Management in Energy and Mineral Production, Proceedings of the International Symposium on Environmental Issues and Waste Management in Energy and Mineral Production, 5th, Ankara, May 18-20, 1998 (1998), 319-322. Editor(s): Pasamehmetoglu, A. Gunhan; Ozgenoglu, Abdurrahim. Publisher: Balkema, Rotterdam, Neth.
CODEN: 67KRAM
DT Conference
LA English
CC 61-2 (Water)
Section cross-reference(s): 51, 60

AB Economical development of the Petrosani coal basin (Romania) based on hard coal unit exploitation and processing has a dynamic character without accounting for environmental aspects. Major environmental problems consist of pollution of Jiu River as a consequence of the effluent rejected in water. Aspects of environmental impact induced by the hard coal mining Petrosani coal basin are discussed.

ST coal mining processing water pollution Petrosani Romania

IT Mining
(**coal**, underground and open-pit; **ecol**. impact of hard **coal** mining and river water pollution redn. at Petrosani **coal** basin, Romania)

IT Chemical oxygen demand
Economics
Suspended sediment
(**ecol**. impact of hard **coal** mining and river water pollution redn. at Petrosani **coal** basin, Romania)

IT **Carbonates**, occurrence
RL: POL (Pollutant); OCCU (Occurrence)
(**ecol**. impact of hard **coal** mining and river water pollution redn. at Petrosani **coal** basin, Romania)

IT **Coal**, uses
RL: NUU (Other use, unclassified); USES (Uses)
(hard; **ecol**. impact of hard **coal** mining and river water pollution redn. at Petrosani **coal** basin, Romania)

IT Water pollution
(river water; **ecol**. impact of hard **coal** mining and river water pollution redn. at Petrosani **coal** basin, Romania)

IT Chlorides, occurrence
Nitrites
Sulfates, occurrence
RL: POL (Pollutant); OCCU (Occurrence)
(river water; **ecol**. impact of hard **coal** mining and river water pollution redn. at Petrosani **coal** basin, Romania)

IT Solid wastes
Solid wastes
(tailings, **coal**; **ecol**. impact of hard **coal** mining and river water pollution redn. at Petrosani **coal** basin, Romania)

IT 12408-02-5, Hydrogen ion, occurrence
RL: OCU (Occurrence, unclassified); OCCU (Occurrence)
(**ecol**. impact of hard **coal** mining and river water pollution redn. at Petrosani **coal** basin, Romania)

IT 7439-89-6, Iron, occurrence
RL: POL (Pollutant); OCCU (Occurrence)
(river water total; **ecol**. impact of hard **coal** mining and river water pollution redn. at Petrosani **coal** basin, Romania)

IT 7782-44-7, Oxygen, occurrence
RL: OCU (Occurrence, unclassified); OCCU (Occurrence)
(river water; **ecol**. impact of hard **coal** mining and river water pollution redn. at Petrosani **coal** basin, Romania)

IT 7439-95-4, Magnesium, occurrence 7440-23-5, Sodium, occurrence 7440-43-9, Cadmium, occurrence 7440-70-2, Calcium, occurrence 14798-03-9, Ammonium, occurrence 14996-02-2, Hydrogen sulfate, occurrence
RL: POL (Pollutant); OCCU (Occurrence)
(river water; **ecol**. impact of hard **coal** mining and river water pollution redn. at Petrosani **coal** basin, Romania)

L2 ANSWER 9 OF 19 CAPLUS

Full Text | Citing References

AN 1998:287095 CAPLUS
DN 129:6453

ED Entered STN: 16 May 1998
TI Manufacturing method of **smokeless** low-rank **coal** briquets
IN Hongo, Takashi; Doi, Shigeyuki; Suetsugu, Kenji
PA Ube Industries, Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C10L005-06
CC 51-24 (Fossil Fuels, Derivatives, and Related Products)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 10121073	A2	19980512	JP 1996-279182	19961022
PRAI	JP 1996-279182		19961022		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 10121073	ICM	C10L005-06

AB A method for manuf. of **smokeless** low-rank **coal** briquets comprises (1) formulating a mixt. of low-rank **coal** and S-fixation agent or clay minerals with water, and pulverizing-mixing to form a mixt. of main body having geometric mean size 100-500 μm, total water content 25-36%, and bulk d. 0.5-1.0 g/cm^3 during forming, (2) formulating a mixt. of charcoal and S-fixation agent with binder and water, and pulverizing-mixing to form an igniting mixt. having geometric mean size 75-150 μm, total water content 28-36%, and bulk d. 0.2-0.7 g/cm^3 during forming, and (3) compression molding the mixt. having the igniting mixt. on top of the main-body mixt.
ST **coal** briquet manuf low rank **smokeless**
IT Bentonite, uses
RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)
(binder; in manufg. method of **smokeless** low-rank **coal** briquets)
IT Clay minerals
RL: MOA (Modifier or additive use); NUU (Other use, unclassified); USES (Uses)
(in manufg. method of **smokeless** low-rank **coal** briquets)
IT Charcoal
RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)
(in manufg. method of **smokeless** low-rank **coal** briquets)
IT Combustion
Fuel briquets
(manufg. method of **smokeless** low-rank **coal** briquets)
IT 1305-62-0, Slaked lime, uses
RL: MOA (Modifier or additive use); NUU (Other use, unclassified); USES (Uses)
(S-fixation agent; manufg. method of **smokeless** low-rank **coal** briquets)
IT 9002-89-5, Polyvinyl alcohol
RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)
(binder; in manufg. method of **smokeless** low-rank **coal** briquets)
IT 497-19-8, Soda ash, uses 584-08-7, Potassium **carbonate**
RL: MOA (Modifier or additive use); NUU (Other use, unclassified); USES (Uses)
(in manufg. method of **smokeless** low-rank **coal**

briquets)

L2 ANSWER 10 OF 19 CAPLUS COPYRIGHT 2004 ACS on STN

Full Text | Citing References

AN 1998:175999 CAPLUS
DN 128:219340
ED Entered STN: 25 Mar 1998
TI Method of refining waste oils (petroleum products)
IN Dimitrieva, Zinaida T.
PA Destiny Oil Anstalt, Liechtenstein; Dimitrieva, Zinaida T.
SO PCT Int. Appl., 28 pp.
CODEN: PIXXD2
DT Patent
LA English
IC ICM C10M175-00
CC 51-8 (Fossil Fuels, Derivatives, and Related Products)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9810045	A1	19980312	WO 1996-IB906	19960909

W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

RW: KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	AU 9667520	A1	19980326	AU 1996-67520	19960909
PRAI	WO 1996-IB906		19960909		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
WO 9810045	ICM	C10M175-00

AB The invention relates to **ecol**. of the environment and conservation of energy-contg. mineral hydrocarbon raw material due to secondary use after treatment of the refined oils and cutting oils in the metal-working industry and in machine engineering. The method involves intensive treatment, without heating, of the raw material by extractant-absorbents as aq. solns. of phosphoric, hydrochloric and sulfuric acids, caustic soda at concns. from 2 up to 88% by mass with a volumetric ratio for the extractant:raw material from 1:1 up to 1:60, without drying or subsequent drying and neutralization over oxides, hydroxides, salts of alk. and alkali-earth metals. The method includes treatment of the raw material with the adsorbent where the raw material is filtered through charcoal or hard **coal** or coke cut with sand in a mass ratio from 1:0.5 to 1:45 and particle dispersion of 160-400 μm.

ST refining waste oil petroleum product
IT Petroleum refining
(extn.; waste oil refining by acid extn. and absorption process)
IT Wastes
(oil; waste oil refining by acid extn. and absorption process)
IT Lubricating oils
(used; waste oil refining by acid extn. and absorption process)
IT Absorbents
Coagulants
Drying
Drying agents
Extractants
Filtration
Neutralization
(waste oil refining by acid extn. and absorption process)
IT Alkali metal salts

Alkaline earth salts
Bases, processes
Charcoal
Coke
Hydroxides (inorganic)
Oxides (inorganic), processes
Zeolites (synthetic), processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(waste oil refining by acid extn. and absorption process)

IT 497-19-8, Sodium **carbonate** (Na2CO3), processes 1305-78-8, Calcium oxide (CaO), processes 1310-58-3, Potassium hydroxide (KOH), processes 1310-73-2, Sodium hydroxide (NaOH), processes 7487-88-9, Sulfuric acid magnesium salt (1:1), processes 7601-54-9, Sodium phosphate (Na3PO4) 7647-01-0, Hydrochloric acid, processes 7664-38-2, Phosphoric acid, processes 7664-93-9, Sulfuric acid, processes 7732-18-5, Water, processes 7757-82-6, Sodium sulfate (Na2SO4), processes 10043-52-4, Calcium chloride (CaCl2), processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(waste oil refining by acid extn. and absorption process)

RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD

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(1) Agnew, J; US 4491515 A 1985 CAPLUS
(2) Carlos, D; US 3376216 A 1968 CAPLUS
(3) Coal Chem Inst Res; SU 1599420 A 1990 CAPLUS
(4) Deutsche Gasolin Aktiengesellschaft; GB 445731 A 1936 CAPLUS
(5) Deutsche Gasolin Aktiengesellschaft; GB 451760 A 1936 CAPLUS
(6) Fainman, M; US 3819508 A 1974 CAPLUS
(7) Fainman, M; US 3835035 A 1974 CAPLUS
(8) Godfrey L Cabot Inc; GB 799278 A 1958
(9) Veb Hydrierwerk Zeitz; DD 267258 A 1989 CAPLUS
(10) Veb Pck Schwedt; DD 212528 A 1984 CAPLUS
(11) Willis; GB 189701 A 1922 CAPLUS

Full Text | Citing References

AN 1997:157180 CAPLUS
DN 126:201472
ED Entered STN: 10 Mar 1997
TI Upgrading selected Czech coals for home and industrial heating
AU Musich, Mark A.; Young, Brian C.
CS Energy & Environmental Reserach Center, University of North Dakota, Grand Forks, ND, 58202, USA
SO Proceedings - Institute for Briquetting and Agglomeration, Biennial Conference (1996), Volume Date 1995, 24, 103-116
CODEN: PIBABP; ISSN: 0145-8701
PB Institute for Briquetting and Agglomeration
DT Journal
LA English
CC 51-17 (Fossil Fuels, Derivatives, and Related Products)
Section cross-reference(s): 59

AB The Czech Republic has large **coal** reserves, particularly brown **coal** and lignite, and to a lesser extent, bituminous **coal**. Concurrent with the recent political changes, there has been a reassessment of the role of **coal** for elec. and heating energy in the future economy, owing to the large dependence on brown **coal** and lignite and the implementation of more stringent environmental regulations. These **coals** have a relatively high sulfur content, typically 1-3 wt%, and ash content, leading to significant SO2 and other gaseous and particulate emissions. Some of the bituminous **coals** also exhibit high ash content. Against this background, the Energy & Environmental Research Center, on behalf of the U.S. Agency for International Development and the U.S. Department of Energy Office of Fossil Energy, undertook a project on upgrading Czech **coals** to achieve desired fuel properties. The purpose of the project

was to assist the city of Usti and Labem in Northern Bohemia in developing cost-effective alternatives for reducing environmental emissions from district and home heating systems. Three **coals** were selected, namely Bilina and Nastup lignites from Northern Bohemia and Ostrava bituminous **coal** from Moravia, for a limited tech. investigation to assess their potential for upgrading. All **coals** were analyzed for ash and sulfur content, forms of sulfur, and ash compn. Bilina and Nastup lignites were subjected to wet and dry phys. cleaning methods to reduce the ash and sulfur content. Phys. cleaned Bilina lignite and raw Ostrava bituminous **coal** were carbonized to reduce volatile matter content. Selected phys. cleaned and carbonized **coals** were tableted with a starch binder and calcium **carbonate**, the latter being added for sulfur capture. Following anal. of the tableted **coal** products, the latter were evaluated for their potential application as district and home heating fuels. Fuels prepd. from raw Ostrava bituminous **coal** and Bilina lignite cleaned by the float-sink method would be acceptable for steam-raising in com. and energy installation applications. Tableted fuels prepd. from Ostrava bituminous **coal** and a carbonized, magnetically cleaned Bilina product would be suitable as **smokeless** fuels for home heating because of their reduced sulfur and volatile matter contents. The Bilina lignite-derived fuels contg. the sulfur capture agent have an emission-effective sulfur content similar to that of the Ostrava fuels. The results of this project indicate the opportunities for reducing sulfur dioxide, smoke, and particulate emissions in Northern Bohemia, esp. around Usti and Labem, by the proper cleaning treatment, briqueting, and utilization of Czech indigenous **coals**. However, further development at pilot and demonstration scales is required, along with an economic evaluation of the fuel prepn. and fuel combustion systems for heating.

ST coal lignite upgrading home industrial heating; treatment coal lignite home industrial heating; beneficiation coal lignite steam raising; deashing briqueting lignite; sulfur dioxide emission control lignite prepn; smoke particulate emission control lignite cleaning

IT Coal treatment
(cleaning; upgrading selected Czech coals for home and industrial heating)

IT Coal treatment
(deashing; upgrading selected Czech coals for home and industrial heating)

IT Airborne particles
Smoke
(emission control; upgrading selected Czech coals for home and industrial heating)

IT Carbonization
(of lignite; upgrading selected Czech coals for home and industrial heating)

IT Heating
(steam; upgrading selected Czech coals for home and industrial heating)

IT Heating
(upgrading selected Czech coals for)

IT Coal treatment
Fuel briquets
Tablets
(upgrading selected Czech coals for home and industrial heating)

IT Coal, uses
Lignite
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(upgrading selected Czech coals for home and industrial heating)

IT 9005-25-8, Starch, uses
RL: NUU (Other use, unclassified); USES (Uses)
(in coal briqueting; upgrading selected Czech coals for home and industrial heating)

IT 471-34-1, Calcium **carbonate**, uses
RL: NUU (Other use, unclassified); USES (Uses)

(in coal prepn., for sulfur capture; upgrading selected Czech coals for home and industrial heating)

RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD

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(1) Couch, G; Lignite Upgrading, 1990, P73
(2) Epa; 1992, EPA/430/R-92/1008
(3) Iea; IEA report 1994, P165
(4) Krivsky, Z; Private Communication 1994
(5) Mall, L; Proceedings of the Production and the Utilization of Ecological Fuels from East Central Coals Workshop 1994, P13
(6) Ministry Of Industry And Trade; Energy Policies in the Czech Republic, Section 2.5.1, Coal In-Country Fuel Resources Quality and Ecological Characteristics, 1994
(7) Moldan, B; Environ Sci & Technol 1992, V26(1), P14 CAPLUS
(8) Young, B; 1995, 95-EERC-05-01, P47

L2 ANSWER 12 OF 19 CAPLUS COPYRIGHT 2004 ACS on STN

Full Text | Citing References

AN 1996:598368 CAPLUS
DN 125:252497
ED Entered STN: 07 Oct 1996
TI Major chemical components and mineralogical character of the inorganic matter of energetic coals from the east part of Upper Silesia Coal Basin (Poland)
AU Bojarska, Katarzyna; Bzowski, Zbigniew
CS Pol.
SO Proceedings - Annual International Pittsburgh Coal Conference (1995), 12th, 511-516
CODEN: PICNE4; ISSN: 1075-7961
PB Pittsburgh Coal Conference, University of Pittsburgh
DT Journal
LA English
CC 51-16 (Fossil Fuels, Derivatives, and Related Products)
Section cross-reference(s): 59, 60, 61
AB It was confirmed that the major components of the mineral matter of the **coals** are clay minerals and **carbonates**. The results of mineralogical and chem. studies of the energetic **coals** are used in **ecol.** evaluation of ash utilization.
ST coal mineral matter ash utilization environment
IT Environmental pollution
Water pollution
(by coal ash, control of; mineral matter of energetic coals of Upper Silesian Coal Basin (Poland))
IT Environment
(mineral matter of energetic coals of Upper Silesian Coal Basin (Poland))
IT Clay minerals
Minerals
RL: OCU (Occurrence, unclassified); POL (Pollutant); OCCU (Occurrence)
(mineral matter of energetic coals of Upper Silesian Coal Basin (Poland))
IT Ashes (residues)
(coal, environment and utilization of; mineral matter of energetic coals of Upper Silesian Coal Basin (Poland))

L2 ANSWER 13 OF 19 CAPLUS COPYRIGHT 2004 ACS on STN

Full Text | Citing References

AN 1996:43533 CAPLUS
DN 124:122448
ED Entered STN: 23 Jan 1996
TI Late Miocene environmental change in Nepal and the northern Indian subcontinent: stable isotopic evidence from paleosols

AU Quade, Jay; Cater, John M. L.; Ojha, Tank P.; Adam, Jon; Harrison, T. Mark
CS Department of Geosciences, University of Arizona, Tucson, AZ, 85721, USA
SO Geological Society of America Bulletin (1995), 107(12), 1381-97
CODEN: BUGMAF; ISSN: 0016-7606
PB Geological Society of America
DT Journal
LA English
CC 53-6 (Mineralogical and Geological Chemistry)
AB Neogene sediments belonging to the Siwalik Group crop out in the Himalayan foothills along the length of southern Nepal. Carbon and oxygen isotopic analyses of Siwalik paleosols from four long Siwalik sections record major **ecol**. changes over the past ~11 Myr. The carbon isotopic compn. of both soil **carbonate** and org. matter shifts dramatically starting ~ 7.0 Myr, marking the displacement of largely C3 vegetation, probably semi-deciduous forest, by C4 grasslands. By the beginning of the Pliocene, all the flood plains of major rivers in this region were dominated by monsoonal grasslands. The floral shift away from woody plants is also reflected by the decline and final disappearance of fossil leaves and the decrease in **coal** logs in the latest Miocene. A similar carbon isotopic shift has been documented in the paleosol and fossil tooth record of Pakistan, and in terrigenous org. matter from the Bengal Fan, showing that the floral shift was probably continent-wide. The latest Miocene also witnessed an av. change of ~4.permill. in the oxygen isotopic compn. of soil **carbonate**, as obsd. previously in Pakistan. The reasons for this are unclear; if not diagenetic, a major environmental change is indicated, perhaps related to that driving the carbon isotopic shift. Recently described pollen and leaf fossils from the Surai Khola section show that evergreen forest was gradually displaced by semi-deciduous and dry deciduous forest between 11 and 6 Myr. The gradual nature of this floral shift, which culminated in the rapid expansion of C4 grasses starting ~7.0 Myr ago, is difficult to explain by a decrease in atm. pCO2 alone (Cerling et al., 1993) but fits well with a gradual onset of monsoonal conditions in the late Miocene in the northern Indian subcontinent. Himalayan uplift, driving both monsoonal intensification and consumption of CO2 through weathering, may be the common cause behind major late Miocene environmental change globally. However, the decline of effective moisture assocd. with monsoon development has probably slowed, not increased, the rate of consumption of CO2 by chem. weathering of Himalayan sediments.
ST paleosol carbon isotope Miocene paleoenvironment Nepal; oxygen isotope **carbonate** paleosol paleoclimate Nepal
IT Plant
(carbon- and oxygen-isotope geochem. of paleosols as evidence of late Miocene environmental change in Nepal and northern Indian subcontinent from semi-deciduous forest to grasslands)
IT Climate
Environment
(paleo-, carbon- and oxygen-isotope geochem. of paleosols as evidence of late Miocene environmental change in Nepal and the northern Indian subcontinent)
IT Soils
(paleosols, carbon- and oxygen-isotope geochem. of paleosols as evidence of late Miocene environmental change in Nepal and the northern Indian subcontinent)
IT 14762-74-4, Carbon-13, occurrence
RL: GOC (Geological or astronomical occurrence); GPR (Geological or astronomical process); OCCU (Occurrence); PROC (Process)
(geol. indicator; in **carbonate** and org. matter from paleosols as evidence of late Miocene environmental change in Nepal and the northern Indian subcontinent)
IT 14797-71-8, Oxygen-18, occurrence
RL: GOC (Geological or astronomical occurrence); GPR (Geological or astronomical process); OCCU (Occurrence); PROC (Process)
(geol. indicator; in **carbonate** from paleosols as evidence of

late Miocene environmental change in Nepal and the northern Indian subcontinent)

L2 ANSWER 14 OF 19 CAPLUS COPYRIGHT 2004 ACS on STN

Full Text | Citing References

AN 1992:534600 CAPLUS
DN 117:134600
ED Entered STN: 04 Oct 1992
TI Is Gaia endothermic?
AU Hsue, K. J.
CS Geol. Inst., ETH-Zentrum, Zurich, CH-8092, Switz.
SO Geological Magazine (1992), 129(2), 129-41
CODEN: GEMGA4; ISSN: 0016-7568
DT Journal; General Review
LA English
CC 53-0 (Mineralogical and Geological Chemistry)
AB A review with 42 refs. discusses the uniqueness of the earth, its atm., biol., and climatol. evolution, as well as the interrelatedness between them. Geol. evidence suggests that Gaia is endothermic: her body temp. has varied, but within limits; there has been no runaway greenhouse like Venus, nor deep freeze like Mars. This paper presents a hypothesis that the Earth's climate has been ameliorated by living organisms: they have served either as heaters or air-conditioners, and their **ecol**. tolerance is the sensor of Gaia's thermostat. At the beginning, 3.8 or 3.5 Gyr ago, only anaerobic autotrophs capable of tolerating high temps. thinned out the atm. CO_2 through carbon fixation. Fossil org. carbon was utilized by anaerobic heterotrophs to reinforce the effectiveness of the Late Archean greenhouse, when solar luminosity was weaker than it is now. With the increasing solar luminosity during early Proterozoic time, new life forms such as cyanobacteria evolved, removing CO_2 from the atm. and storing it in stromatolitic **carbonates**. Over-eager cyanobacteria may have consumed too much greenhouse CO_2 to cause glaciation. Their decline coincided in timing with the rise of the Ediacaran faunas which had no **carbonate** skeletons. The change in the mode of carbon-cycling may have started the warming trend after the Proterozoic glaciation. The Cambrian explosion was an event when skeletal eukaryotes usurped the function of prokaryotes in removing greenhouse CO_2 through $CaCO_3$ pptn. With the evolution of land plants, **coal**-makers took over the 'air-conditioning' duty. They over-did it, and Permo-Carboniferous glaciation ensued. After a wholesale turnover of the faunas and floras at the end of the Paleozoic, more CO_2 was released than fixed in Early Mesozoic time. The warming trend reached its zenith in the early Cretaceous, when flowering trees and calcareous plankton began to flourish. The decline since then, with a temporary restoration during Early Paleogene time, could be a manifestation of the varying efficiency of extg. and burying carbon dioxide, in the form of inorg. and org. carbon. The relation of atm. CO_2 and climatic variation is documented by study of air bubbles in ice cores. Yet there is also correlation to astronomical cycles. The latter seem to have triggered changes which are amplified by feedback mechanisms of carbon cycling.
ST review carbon cycle climate Earth history; atm biol climatol evolution Earth review
IT Evolution
(effect on geochem. carbon cycle, paleoclimate in relation to)
IT Atmosphere
(evolution of, biol.- and climatol. evolution and geochem. cycle in relation to)
IT Climate
(paleo-, atm.- and biol. evolution and the carbon geochem. cycle in relation to)
IT 7440-44-0, Carbon, properties
RL: PRP (Properties)
(geochem. cycle, biol. and paleoclimatol. evolution in relation to, during Earth's history)

L2 ANSWER 15 OF 19 CAPLUS COPYRIGHT 2004 ACS on STN

Full Text | Citing References

AN 1985:223291 CAPLUS
DN 102:223291
ED Entered STN: 29 Jun 1985
TI Coal or coke briquets
IN Messenig, Leo; Cieslik, Wolfgang; Opdenwinkel, Heinz
PA Ruhrkohle A.-G., Fed. Rep. Ger.
SO Eur. Pat. Appl., 13 pp.
CODEN: EPXXDW
DT Patent
LA German
IC ICM C10L005-14
CC 51-24 (Fossil Fuels, Derivatives, and Related Products)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 135785	A2	19850403	EP 1984-109823	19840817
	EP 135785	A3	19870114		
	EP 135785	B1	19891025		
	R: AT, BE, CH, DE, FR, GB, IT, LI, LU, NL, SE				
	DE 3335240	A1	19850418	DE 1983-3335240	19830929
	AT 47602	E	19891115	AT 1984-109823	19840817
PRAI	DE 1983-3335240		19830929		
	EP 1984-109823		19840817		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
EP 135785	ICM	C10L005-14

AB **Smokeless** sootless mech. strong **coal** or coke briquets are manufd. by spraying a finely divided fuel (at 80-95°) with a hot soln. of fully sapond. (>97%) poly(vinyl acetate) (viscosity 40-100 mPa-S) binding agent, homogenizing the mixt., and pressing the fuel into briquets with dewatering. The fuel briquets contain 0.3-2 wt.% poly(vinyl alc.). In addn., <3 wt.% molasses or <1.5 wt.% $CaCO_3$ can be added to improve the heat stability.
ST coal coke briquet molasses; polyvinyl alc coal coke briquet; binding material coal coke briquet; calcium **carbonate** coal coke briquet
IT Fuel briquets
(coal and coke, manuf. of, sapond. poly(vinyl acetate) binders for, molasses or calcium **carbonate** additives for)
IT Molasses
(**smokeless** sootless mech. strong **coal** or coke briquets contg.)
IT 471-34-1, uses and miscellaneous 9003-20-7D, sapond.
RL: USES (Uses)
(**smokeless** sootless mech. strong **coal** or coke briquets contg.)

L2 ANSWER 16 OF 19 CAPLUS COPYRIGHT 2004 ACS on STN

Full Text | Citing References

AN 1985:206483 CAPLUS
DN 102:206483
ED Entered STN: 15 Jun 1985
TI Coal and coke briquets
IN Messenig, Leo; Cieslik, Wolfgang; Opdenwinkel, Heinz
PA Ruhrkohle A.-G., Fed. Rep. Ger.
SO Ger. Offen., 14 pp.
CODEN: GWXXBX
DT Patent
LA German

IC ICM C10L005-10
CC 51-24 (Fossil Fuels, Derivatives, and Related Products)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 3335241	A1	19850418	DE 1983-3335241	19830929
PRAI	DE 1983-3335241		19830929		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
DE 3335241	ICM	C10L005-10

AB Smokeless spotless mech. strong coal or coke briquets contain 1.2-1.8 wt.% $CaCO_3$ and 0.5-1.5 wt.% fully sapond. poly(vinyl acetate) with viscosity 50-70 mPa-s. The finely ground coal or coke is heated to 100 ± 20° and then sprayed with hot (heated to 80-95°) aq. soln. of poly(vinyl alc.) contg. $CaCO_3$. The mixt. is then homogenized and pressed and dewatered to briquets.
ST coal coke briquetting smokeless spotless; calcium carbonate coal coke briquet; polyvinyl alc coal coke briquet
IT Fuel briquets
(coal or coke, manuf. of, smokeless sootless, additives for)
IT 471-34-1, uses and miscellaneous 9003-20-7D, sapond.
RL: USES (Uses)
(additives, in manuf. of smokeless sootless mech. strong coal or coke briquets)

L2 ANSWER 17 OF 19 CAPLUS COPYRIGHT 2004 ACS on STN
Full Text Citing References
AN 1974:493906 CAPLUS
DN 81:93906
ED Entered STN: 12 May 1984
TI Briquet for frost-prevention
IN Onozawa, Tatsugoro
SO Jpn. Tokkyo Koho, 2 pp.
CODEN: JAXXAD
DT Patent
LA Japanese
IC C10L
CC 51-23 (Fossil Fuels, Derivatives, and Related Products)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 49011443	B4	19740316	JP 1970-74594	19700827
PRAI	JP 1970-74594		19700827		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 49011443	IC	C10L

AB A briquet is prepd. contg. carbonaceous material and $(NH_4)_2CO_3$ or NH_4HCO_3. It has no harmful effect on plant life. The carbonaceous material, e.g. smokeless coal, coke, or charcoal, is mixed with $(NH_4)_2CO_3$ or NH_4HCO_3 5-20, $CaCO_3$ 3-5, iron powder 1, and binder ~2%. Water is mixed in and the briquets are formed and dried. Thus, carbonaceous material contg. 7 parts smokeless coal per 3 parts charcoal 82, $(NH_4)_2CO_3$ 10, $CaCO_3$ 5, iron powder 1, and dextrin 2 wt. parts were mixed with water and briquetted. A 1450-g briquet emitted a white smoke contg. NH_3 for 3 hr during combustion. The briquet continued to burn for an addnl. 4 hr without generating smoke.
ST frost damage preventive briquet; plant frost damage prevention
IT Briquets, fuel
(charcoal-coal, contg. ammonium carbonate)
IT Frost

(crop damage from, fuel briquets for prevention of)
IT Charcoal
RL: USES (Uses)
(fuel briquets contg.)
IT 471-34-1, uses and miscellaneous 506-87-6 9004-53-9
RL: USES (Uses)
(fuel briquets contg.)
IT 7439-89-6, uses and miscellaneous
RL: USES (Uses)
(powd., fuel briquets contg.)

L2 ANSWER 18 OF 19 CAPLUS COPYRIGHT 2004 ACS on STN

Full Text | Citing References

AN 1963:453746 CAPLUS
DN 59:53746
OREF 59:9697c-e
ED Entered STN: 22 Apr 2001
TI Fuel briquets
PA Great Lakes Carbon Corp.
SO 5 pp.
DT Patent
LA Unavailable
CC 26 (Coal and Coal Derivatives)

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	GB 929810		19630626	GB	19610327

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
GB 929810		

AB Bituminous **coal** particles with 14-23% volatile content are heated at a rate in excess of 2000°F. surface temp. per sec. to about 1600°F. in a gas stream contg. 2-4 cu. ft. of O per lb. of **coal.** The sepd. solid has a particle size between 5 and 1000 μ and a volatile content of 7-15%. If desirable, the treatment may be repeated further to depress the volatile content. The powder is mixed with an aq. binder contg. a starch, briquetted, and dried. Various substances may be incorporated in the mixt. before pressing to enhance certain properties. These include alkali **carbonates**, nitrates, chlorates, chlorides, and the oxides of Cu or Pb, or lime and hickory sawdust. The briquets are **smokeless**. Coating them with a starch soln. reduces the amt. of fines on the surface. Cf. U.S. 2,017,402 (CA 29, 82949); Brit. 786,207.
IT Briquets, fuel
(from flash-calcined coal)

L2 ANSWER 19 OF 19 CAPLUS COPYRIGHT 2004 ACS on STN

Full Text | Citing References

AN 1935:4627 CAPLUS
DN 29:4627
OREF 29:575h-i,576e-i,577a-b
ED Entered STN: 16 Dec 2001
TI The solid products of the carbonization of coal
CS Chemical Department, South Metroplitan Gas Co.
SO South Metropolitan Gas Co., London (1934) 123 pp.
DT Journal
LA Unavailable
CC 21 (Fuels, Gas, Tar, and Coke)
AB A comparison of the results of lab. tests of ignition temp., combustibility in air, and reactivity with CO2 and steam on a series of cokes and chars showed good general correlation among the 4 different tests and indicated that any one of them would serve to evaluate the burning properties of cokes in grate fires. Several **coals** were

carbonized in a 6-in. Carborundum retort at various temps. ranging from 500° to 1050°. The ignition temps. of the resulting cokes increased from 470° to 626°, as the carbonizing temp. increased from 650° to 900°. Up to 900°, the H content of the cokes decreased in almost direct proportion to the increase of carbonizing temp. In general, the effect of increasing carbonizing temp. on the properties of the cokes was to decrease the reactivity to air, CO2, steam, and H2SO4, and to increase the apparent and true density, and the elec. cond. These changes in coke characteristics were most marked at about 700° carbonization temp. and coincided with the change in appearance from a dull black to the characteristic silvery sheen of high-temp. coke. The absorptive capacity of the cokes for CO2 increased sharply with increasing temp. of carbonization up to a max. at 700° and then fell rapidly. Deposition of graphitic C reduced slightly the reactivity of the high-temp. cokes but seemingly was not the major cause of the large difference between low- and high-temp. cokes. Alteration of the phys. structure produced by any modification of the high-temp. carbonizing process likely to be practicable was quite ineffective in producing a substantial improvement in the combustibility of the coke. Addn. of Na **carbonate** increased the reactivity with steam but did not reduce the ignition temp. proportionately nor did it measurably increase the combustibility in air. As a result of this investigation the authors believe that the difference in reactivity between low- and high-temp. coke is due to a profound change in chem. rather than phys. structure. Assuming that the benzene ring nucleus plays an important part in the chem. structure of **coal,** they believe that in the low-temp. carbonization of **coal,** i. e., below 700° side chains are stripped from the nucleus without coalescence of these nuclei; whereas, in carbonization above 700°, the single nuclei coalesce to form complex polycyclic compds. coincident with a marked evolution of H. The closer assocn. of the C atoms without the frequent interposition of H atoms suggests a plausible explanation of the reduced chem. activity. To obtain a **smokeless** solid fuel, readily ignitable and freely burning in the ordinary domestic grate the **coal** must be carbonized below 700°. This fuel should have a low ash, not over 5% moisture, about 13% volatile matter, elec. resistivity not less than one million ohms, and be between I and 3 in. in size. An exptl. study of the relation of the characteristics of high-temp. cokes in relation to its use in gas grates and hot-water boilers showed that fairly satisfactory results could be had by the use of specially designed "Metro" coke grates and by preparing the coke as follows: size, 1-2 in., moisture 3%, volatile therms per ton 2 1/2, and as low ash vol. as possible. For hot-water boilers, the min. rate of combustion at which the fire will maintain itself is the most important property.

IT Char
(burning properties of, carbonizing conditions and)
IT Coke
(combustibility of, effect of rate of heating of coal on)
IT Fuels
(smokeless, by low-temp. carbonization)
IT Carbonization
(solid products of)

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  substance identification.


=> s ecological coal
          9916 ECOLOGICAL
             4 ECOLOGICALS
          9918 ECOLOGICAL
                 (ECOLOGICAL OR ECOLOGICALS)
         34118 ECOL
             1 ECOLS
         34119 ECOL
                 (ECOL OR ECOLS)
         38406 ECOLOGICAL
                 (ECOLOGICAL OR ECOL)
        209512 COAL
         35522 COALS
        211340 COAL
                 (COAL OR COALS)
L3          10 ECOLOGICAL COAL
                 (ECOLOGICAL(W)COAL)
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=> d l3 1-10 all

L3   ANSWER 1 OF 10  CAPLUS  COPYRIGHT 2004 ACS on STN
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Full Text | Citing References

```
AN   2003:504083  CAPLUS
DN   139:194292
ED   Entered STN:  02 Jul 2003
TI   The microbial ecology of soil surrounding an outdoor coal storage pile
AU   Dore, Sophia Yasmine
CS   Univ. of Notre Dame, Notre Dame, IN, USA
SO   (2002) 128 pp.  Avail.: UMI, Order No. DA3068011
     From: Diss. Abstr. Int., B 2003, 63(10), 4482
DT   Dissertation
LA   English
CC   10-6 (Microbial, Algal, and Fungal Biochemistry)
AB   Unavailable
ST   microbial ecol coal storage pile soil
IT   Microbial ecology
     Soil pollution
        (microbial ecol. of soil surrounding outdoor coal storage pile)
IT   Coal, biological studies
     RL: BSU (Biological study, unclassified); BIOL (Biological study)
        (microbial ecol. of soil surrounding outdoor coal storage pile)
IT   Ecology
        (soil; microbial ecol. of soil surrounding outdoor coal storage pile)

L3   ANSWER 2 OF 10  CAPLUS  COPYRIGHT 2004 ACS on STN
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Full Text | Citing References

```
AN   2001:740293  CAPLUS
DN   136:234463
ED   Entered STN:  11 Oct 2001
TI   Clean and ecological coal combustion in the binary circulating
     fluidized bed
AU   Nowak, W.; Muskala, W.
CS   Technical University of Czestochowa, Czestocowa, 42-200, Pol.
SO   Energy (Oxford, United Kingdom) (2001), 26(12), 1109-1120
     CODEN: ENEYDS; ISSN: 0360-5442
PB   Elsevier Science Ltd.
DT   Journal
LA   English
CC   51-18 (Fossil Fuels, Derivatives, and Related Products)
AB   The aim of this paper is to increase the understanding of the role of the
     binary circulating fluidized bed in the process of clean and ecol.
     coal combustion.  The operating range of a stable fluidized bed, as a
     function of gas velocity changes and the flow rate of fine particles, is
     detd. for all possible conditions.  Expts. concerning the combustion and
     desulfurization processes in multi-solid fluidized bed (MSFB) and
     circulating fluidized bed (CFB) systems give evidence that the residence
     time of burnt particles in the combustion chamber of MSFB is much
     extended.  This is directly reflected in better combustion conditions,
     esp. those for fine particles, as well as in the process of
     desulfurization.  The advantages of the binary circulating fluidized bed
     over typical circulating systems make it one of the most efficient methods
     of clean and ecol. coal combustion.
ST   coal combustion binary circulating fluidized bed; desulfurization coal
     binary circulating fluidized bed
IT   Combustion
        (clean and ecol. coal combustion in binary
        circulating fluidized bed)
IT   Coal, processes
     RL: CPS (Chemical process); PEP (Physical, engineering or chemical
```

process); PROC (Process)
(clean and **ecol. coal** combustion in binary circulating fluidized bed)
IT Coal treatment
(desulfurization; in binary circulating fluidized bed)
IT Fluidized beds
(recirculating; clean and **ecol. coal** combustion in binary circulating fluidized bed)
RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

(1) Kojima, Y; Circulating fluidized beds technology 1988, P369
(2) Nowak, W; Gospodarka Paliwami i Energia 1995, V7, P2
(3) Nowak, W; Proceedings of the 5th SCEJ Symposium on Circulating Fluidized Beds 1993, P14
(4) Nowak, W; Proceedings of the International Conference on Energy Systems and Ecology 1993, P37
(5) Win, K; J Chem Eng Jpn 1995, V28(5), P535 CAPLUS

L3 ANSWER 3 OF 10 CAPLUS COPYRIGHT 2004 ACS on STN
Full Text | Citing References
AN 2001:1584 CAPLUS
DN 134:58770
ED Entered STN: 01 Jan 2001
TI The international coal market - yesterday, today, tomorrow
AU Stadelhofer, Jurgen W.
CS Vorstandes RAG Coal International AG, Essen, D-45128, Germany
SO Erzmetall (2000), 53(10), 613-623
CODEN: ERZMAK; ISSN: 0044-2658
PB GDMB-Informationsgesellschaft
DT Journal; General Review
LA German
CC 51-0 (Fossil Fuels, Derivatives, and Related Products)

AB A discussion and review without refs. Coal currently covers about 25 % of primary energy consumption in the world, a share that will remain about const. over the coming 20 yr. In view of the expected increase of energy consumption, this means a significant rise of coal demand - by about 30 % in 2020. The principal fields of application are the power and the steel industries. The share of coal in the prodn. of elec. power amts. in certain countries to more than 70 % - in the USA 56 %. Coal reserves in the world are adequate to cope with the expected increase in consumption. The importance of the international coal trade is growing. Both the steel and the power industries have potentials for reducing their CO_2 emissions. Following the purchase of companies in both the USA and Australia, RAG has become one of the leading international coal companies, and is actively engaged in developing clean coal technologies, with a view to ensuring **ecol. coal** utilization in future.

ST review coal economics
IT Economics
(international coal market yesterday, today, and tomorrow)
IT Coal, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(international coal market yesterday, today, and tomorrow)

L3 ANSWER 4 OF 10 CAPLUS COPYRIGHT 2004 ACS on STN
Full Text | Citing References
AN 1995:786407 CAPLUS
DN 123:265274
ED Entered STN: 12 Sep 1995
TI Ecological and geochemical evaluation of tailings of the coal mining industry
AU Bulavina, A. V.; Bydtaeva, N. G.; Gavrtlei, V. A.
CS Russia

SO Razvedka i Okhrana Nedr (1995), (3), 37-8
CODEN: RZONAV; ISSN: 0034-026X
PB Nedra
DT Journal
LA Russian
CC 60-6 (Waste Treatment and Disposal)
Section cross-reference(s): 51, 53
AB Anal. of tailings from coal mines of the Donets coal basin (Ukraine) indicated that the waste rock piles are the source of environmental pollution (of soil, water and biota) by highly toxic elements and compds. Exptl. results indicated that aq. solns. remove Se, Cu, V, Cr, and Zn from tailings, making these wastes unsuitable for use as fertilizers. An increased migration of some toxic elements, esp. such as S, Se, and F can cause pollution of drinking water sources. The assessment of the environmental effects of tailings storage would require a complex study of soil, water, and a biogenic component, with the identification of migration pathways and accumulation areas of toxic elements.
ST ecol effect coal mining tailing; geochem **ecol coal** mining waste
IT Environmental pollution
Environmental transport
Soil pollution
Water pollution
(ecol. and geochem. evaluation of tailings from coal mining)
IT Trace elements, occurrence
RL: POL (Pollutant); OCCU (Occurrence)
(ecol. and geochem. evaluation of tailings from coal mining)
IT Mines and Mining
(coal, ecol. and geochem. evaluation of tailings from coal mining)
IT Waste solids
(tailings, ecol. and geochem. evaluation of tailings from coal mining)
IT 7439-89-6, Iron, occurrence 7439-92-1, Lead, occurrence 7439-93-2, Lithium, occurrence 7439-97-6, Mercury, occurrence 7439-98-7, Molybdenum, occurrence 7440-02-0, Nickel, occurrence 7440-24-6, Strontium, occurrence 7440-31-5, Tin, occurrence 7440-38-2, Arsenic, occurrence 7440-41-7, Beryllium, occurrence 7440-42-8, Boron, occurrence 7440-47-3, Chromium, occurrence 7440-48-4, Cobalt, occurrence 7440-50-8, Copper, occurrence 7440-62-2, Vanadium, occurrence 7440-66-6, Zinc, occurrence 7440-69-9, Bismuth, occurrence 7704-34-9, Sulfur, occurrence 7782-49-2, Selenium, occurrence 16984-48-8, Fluoride, occurrence
RL: POL (Pollutant); OCCU (Occurrence)
(ecol. and geochem. evaluation of tailings from coal mining)

L3 ANSWER 5 OF 10 CAPLUS COPYRIGHT 2004 ACS on STN
Full Text | Citing References
AN 1995:745081 CAPLUS
DN 123:148605
ED Entered STN: 18 Aug 1995
TI Ecological and economical aspects of coal combustion as a function of its quality parameters
AU Kurczabinski, Leon
CS Pol.
SO Przeglad Gorniczy (1995), 51(4), 46-52
CODEN: PRGOAI; ISSN: 0033-216X
PB Wydawnictwo SIGMA-NOT
DT Journal
LA Polish
CC 51-18 (Fossil Fuels, Derivatives, and Related Products)
Section cross-reference(s): 59
AB The state and directions of development of **ecol. coal** utilization are described taking into consideration both Polish and foreign research and investment programs. The problems presented by the emission of pollutants to the atm. by the Polish power industry are discussed. An account is

given of the effect of application of high quality coals yielded by mech. coal prepn. methods, on the economics of certain operations assocd. with power prodn. and with environmental protection.
ST coal combustion power plant emission Poland
IT Air pollution
(ecol. and economical aspects of coal combustion and emission in relation to Polish power industry)
IT Combustion
(of coal; ecol. and economical aspects of coal combustion as a function of its quality parameters)
IT Power
(plant; ecol. and economical aspects of coal combustion and emission in relation to Polish power industry)

L3 ANSWER 6 OF 10 CAPLUS COPYRIGHT 2004 ACS on STN
Full Text Citing References
AN 1986:36448 CAPLUS
DN 104:36448
ED Entered STN: 08 Feb 1986
TI Coal-water fuel combustion; fundamentals and application. A North American overview
AU Beer, J. M.
CS Massachusetts Inst. Technol., Cambridge, MA, USA
SO Institution of Chemical Engineers Symposium Series (1985), 95(Eur. Conf. Coal Liq. Mixtures, 2nd), 377-405
CODEN: ICESDB; ISSN: 0307-0492
DT Journal; General Review
LA English
CC 51-0 (Fossil Fuels, Derivatives, and Related Products)
AB A review with 51 refs. The properties of coal-water slurries (CWS), burner development for CWS combustion, ecol. advantages of CWS over powd. coal combustion, and economic considerations are included.
ST review coal water slurry combustion; burner coal water slurry review; **ecol coal** water slurry review; economics coal water slurry review
IT Environmental pollution
(furnace firing with coal-water slurries effect on)
IT Combustion
(of coal-water slurries)
IT Firing of furnaces
(with coal-water slurries)

L3 ANSWER 7 OF 10 CAPLUS COPYRIGHT 2004 ACS on STN
Full Text Citing References
AN 1982:148618 CAPLUS
DN 96:148618
ED Entered STN: 12 May 1984
TI The impact of coal mining on river ecology
AU Edwards, R. W.
CS Univ. Wales Inst. Sci. Technol., Cardiff, UK
SO Min. Water Pollut., Inst. Water Eng. Sci. Sci. Sect. Symp. (1981), 3/1-3/8
Publisher: Inst. Water Eng. Sci., London, UK.
CODEN: 47KDAQ
DT Conference; General Review
LA English
CC 61-0 (Water)
Section cross-reference(s): 51
AB A review with 28 refs.
ST review river **ecol coal** mining
IT Rivers
(ecol. of, coal mining in relation to)
IT Water pollution
(river, by coal mining, ecol. in relation to)

IT   Mines and Mining
        (coal, river ecol. in relation to)
IT   Ecology
        (river, coal mining in relation to)

L3   ANSWER 8 OF 10 CAPLUS COPYRIGHT 2004 ACS on STN

Full Text | Citing References

AN   1979:496139 CAPLUS
DN   91:96139
ED   Entered STN: 12 May 1984
TI   Microbial ecology studies at two coal mine refuse sites in Illinois
AU   Miller, R. M.; Cameron, R. E.
CS   Argonne Natl. Lab., Argonne, IL, USA
SO   Report (1978), ANL/LRP-3, 48 pp. Avail.: NTIS
     From: Energy Res. Abstr. 1979, 4(5), Abstr. No. 9491
DT   Report
LA   English
CC   60-2 (Sewage and Wastes)
     Section cross-reference(s): 51
AB   An investigation was made of the microflora assocd. with coal refuse at 2 abandoned mines in the midwestern US. Information was gathered for both the edaphic and the biotic compn. of the refuse material. Emphasis was placed on heterotrophic and autotrophic components as to nos., kinds, and physiol. groups. The presence of chemolithotrophs was also investigated. The relation between abiotic and biotic components in regard to distribution of bacteria, fungi, and algae is discussed. Information presented in this report will be utilized in assessing trends and changes in microbial nos. and compn. related to manipulations of the edaphic and biotic ecosystem components assocd. with reclamation of the refuse piles.
ST   microbial **ecol coal** mine tailing
IT   Microorganism
        (ecol. of, in coal mining refuse)
IT   Mining
        (of coal, refuse from, microbial ecol. in)
IT   Waste solids
        (coal tailings, reclamation of)

L3   ANSWER 9 OF 10 CAPLUS COPYRIGHT 2004 ACS on STN

Full Text | Citing References

AN   1975:509440 CAPLUS
DN   83:109440
ED   Entered STN: 12 May 1984
TI   Lichen accumulation of some heavy metals from acidic surface substrates of coal mine ecosystems in southeastern Ohio
AU   Lawrey, James D.; Rudolph, Emanuel D.
CS   Dep. Bot., Ohio State Univ., Columbus, OH, USA
SO   Ohio Journal of Science (1975), 75(3), 113-17
     CODEN: OJSCA9; ISSN: 0030-0950
DT   Journal
LA   English
CC   4-3 (Toxicology)
AB   Lichen samples from coal strip mines contained heavy metals at many times the concns. found in their substrates. Cladonia cristatella samples washed with water contained significantly less metals than untreated samples. Lichen material extd. with acetone showed no drop in metal content compared to untreated lichens. The accumulating nature of lichens in strip mine ecosystems makes them potential research tools in mineral cycling studies.
ST   heavy metal lichen strip mine; **ecol coal** mine lichen
IT   Mines
        (coal, heavy metals in lichens from)
IT   Cladonia

h   eb c   g cg b   cg   eb

(heavy metals of, from strip mines)
IT Ecology
(of heavy metals, near coal strip mines, lichens in relation to)
IT 7439-89-6, biological studies 7440-50-8, biological studies
RL: BIOL (Biological study)
(of lichens, from coal strip mines)
IT 7429-90-5, biological studies 7439-95-4, biological studies 7439-96-5, biological studies 7439-98-7, biological studies 7440-09-7, biological studies 7440-66-6, biological studies 7440-70-2, biological studies 7723-14-0, biological studies
RL: BIOL (Biological study)
(of lichens, from strip mines)

L3 ANSWER 10 OF 10 CAPLUS
Full Text Citing References
AN 1975:93887 CAPLUS
DN 82:93887
ED Entered STN: 12 May 1984
TI Toxicity of acid coal-mine spoils to plants
AU Berg, William A.; Vogel, Willis G.
CS Forest Serv., U. S. Dep. Agric., Berea, KY, USA
SO Ecol. Reclam. Devastated Land, [Proc. NATO Adv. Study Inst.] (1973), Meeting Date 1969, Volume 1, 57-68. Editor(s): Hutnik, Russell J.; Davis, Grant. Publisher: Gordon and Breach, New York, N. Y.
CODEN: 29SNAK
DT Conference
LA English
CC 4-3 (Toxicology)
AB Herbaceous legumes, shrub lespedezas, and black locust grown from seed in extremely acid spoils in the greenhouse and field, showed chlorosis on the margins of the leaves, which is indicative of Mn [7439-96-5] toxicity. Symptoms of Al [7429-90-5] toxicity were stubby roots without laterals. Spoil pH was useful in predicting Mn toxicity to the legumes, but water-sol. Mn extd. from the spoils was not. Toxicity of extremely acid coal-mine spoils to plants was caused by excess sol. Mn and other metals, most probably Al. One yr after extremely acid spoils were mulched with hardwood chip, the pH of the top 30 cm was raised, while the total sol. salts and water-sol. Al were reduced.
ST coal mine spoil toxicity plants; **ecol coal** mine spoil plant; manganese mine spoil plant; aluminum mine spoil plant
IT Mines
(coal, acid spoil of, toxicity of, to plants, aluminum and manganese in relation to)
IT Ecology
(environmental damage, from coal-mine spoils)
IT 7429-90-5, biological studies 7439-96-5, biological studies
RL: BIOL (Biological study)
(of coal-mine spoils, toxicity of, to plants)

=> **s power coal**
468154 POWER
21166 POWERS
480788 POWER
(POWER OR POWERS)
209512 COAL
35522 COALS
211340 COAL
(COAL OR COALS)
L4 858 POWER COAL
(POWER(W)COAL)

=> **s caking coal**

```
          6210 CAKING
             3 CAKINGS
          6212 CAKING
                 (CAKING OR CAKINGS)
        209512 COAL
         35522 COALS
        211340 COAL
                 (COAL OR COALS)
L5        1012 CAKING COAL
                 (CAKING(W)COAL)
```

=> **s 14 and 15**

```
L6           3 L4 AND L5
```

=> **d 16 1-3 all**

L6 ANSWER 1 OF 3 CAPLUS COPYRIGHT 2004 ACS on STN

Full Text | Citing References

AN 1980:475344 CAPLUS
DN 93:75344
ED Entered STN: 12 May 1984
TI Changes in the properties of concentrates obtained from different ranks of Karaganda coals in relation to separation densities
AU Muzychuk, V. D.; Mel'nichuk, A. Yu.; Pluzhnikov, A. I.; Dobrovinskii, G. B.; Turchenkova, L. M.
CS Karagand, Politekh. Inst., Karaganda, USSR
SO Khimiya Tverdogo Topliva (Moscow, Russian Federation) (1980), (1), 10-16 CODEN: KTVTBY; ISSN: 0023-1177
DT Journal
LA Russian
CC 51-21 (Fossil Fuels, Derivatives, and Related Products)
AB Beneficiation technols. for various coals depend on the properties of their concs. produced at different sepn. densities and are related to the quality of coke produced from them; concs.of certain Karaganda coals obtained at sepn. densities as low as 1800 kg/m3 have high caking power, and beneficiation technol. for these coals provides for their max. extn. into the coking conc.; fine grades of weakly **caking coals** are beneficiated at sepn. densities ≤1400kg/m3 in the prodn. of concs. of increased caking power and suitable for coking.
ST coal conc sepn density; coking **power coal** beneficiation; coking coal caking power
IT Carbonization and Coking
    (coals for, beneficiation of, caking properties in relation to, of Karaganda)
IT Coal
    RL: USES (Uses)
    (coking, beneficiation of, caking properties in relation to, of Karaganda)

L6 ANSWER 2 OF 3 CAPLUS COPYRIGHT 2004 ACS on STN

Full Text | Citing References

AN 1979:577805 CAPLUS
DN 91:177805
ED Entered STN: 12 May 1984
TI Combustion Engineering low-Btu coal gasification process
AU Richards, C. L.
CS Combust. Eng., Inc., Windsor, CT, USA
SO Report (1978), TIS-5862, CONF-780384-1, 8 pp. Avail.: Combustion Eng. Inc., Windsor, Conn
    From: Energy Res. Abstr. 1979, 4(11), Abstr. No. 28751
DT Report
LA English

CC 51-26 (Fossil Fuels, Derivatives, and Related Products)
Section cross-reference(s): 47, 48

AB A design for air-blown entrainment gasification of coal at 1 atm. for elec. power generation permits use of most coals without special pretreatment (for **caking coals**), permits prodn. of a slagged ash, to minimize ash disposal problems, and consumes ≈100% of the C of the coal in the gasifier.

ST coal gasification low BTU; elec **power coal** gasification; design coal gasification; ash slagging coal gasification

IT Slags
(ash removal by, in atm. coal gasification)

IT Power
(generation of, low-BTU coal gasification in relation to)

IT Ashes (residues)
(coal, removal of, in atm. gasification by slagging)

IT Fuel gas manufacturing
(gasification, of coal to low-BTU gas)

L6 ANSWER 3 OF 3 CAPLUS COPYRIGHT 2004 ACS on STN

Full Text | Citing References

AN 1968:106689 CAPLUS

DN 68:106689

ED Entered STN: 12 May 1984

TI Chemical characteristics of chloroform extracts from coking coal and their effects on caking power

AU Ihnatowicz, Maria; Lesniewski, Kazimierz

SO Prace Glownego Instytutu Gornictwa (1966), No. 393, 1-12
CODEN: PGIGAT; ISSN: 0369-934X

DT Journal

LA Czech

CC 52 (Coal and Coal Derivatives)

AB Properties of $CHCl_3$ exts. from raw ortho-**caking coal** and also from ortho-**caking coals** and from vitrains sepd. from them and previously preheated to a detd. optimum temp. of 415° were examd. The $CHCl_3$ exts. obtained were divided into the following fractions: sol. in Et_2O, sol. and insol. in 10% H_2SO_4, in 10% H_2OH, and in n-hexane. Next, the fractions were sepd. in chromatographic columns. The properties of the $CHCl_3$ exts. examd. and their fractions were characterized by their elemental anal. and ir absorption spectra. Caking power of individual exts. and of their fractions were also detd. by adding various amts. to coals previously extd. or raw, and for mixts. thus obtained the caking power was detd. according to Roga. Depending on the method of prepg. the coal (raw or preheated) and on the temp. of extn. (at the b.p. of $CHCl_3$ or at room temp.), individual $CHCl_3$ exts. differ from each other in the yield, elemental compn., caking power, and proportion and properties of fractions obtained from them by the use of solvents. The $CHCl_3$ exts. examd. contained 3 fractions: insol. in Et_2O and insol. and sol. in n-hexane; the first two had a higher caking power and were more aromatic than the other fraction. The tests carried out show that although the $CHCl_3$ exts. of ortho-**caking coals** markedly affect the caking power of coal, their specific part in the phenomenon of coal caking only takes place when they are organically linked with the whole coal system. 42 references.

ST COAL EXTS CAKING POWER; CHLOROFORM EXTS COAL; VITRAINS EXTS; COKING COAL; CAKING **POWER COAL** EXTS

IT Coal
RL: USES (Uses)
(extract (chloroform) of, chem. characteristics of and caking power in relation to)

=> **s l4 or l5**

L7 1867 L4 OR L5

```
=> s l7 and smokeless
          2552 SMOKELESS
L8          30 L7 AND SMOKELESS

=> s l8 and (byproducts or by-products)
         23414 BYPRODUCTS
       1246970 BY-PRODUCTS
                 (PRODUCTS)
L9           9 L8 AND (BYPRODUCTS OR BY-PRODUCTS)

=> d l9 1-9 all

L9   ANSWER 1 OF 9  CAPLUS  COPYRIGHT 2004 ACS on STN
Full Text   Citing References
AN   1964:468321  CAPLUS
DN   61:68321
OREF 61:11809c-e
ED   Entered STN:  22 Apr 2001
TI   Pilot-plant studies on low-temperature carbonization of Indian coals. II.
     Products
AU   Rao, K. Seshagiri; Rao, Y. V. Subba; Rao, D. K.; Agrawal, D. P.; Rao, B.
     S. Narayana; Vaidyeswaran, R.
CS   Regional Res. Lab., Hyderabad
SO   Low-Temp. Carbonization Non-Caking Coals Lignites Briquett. Coal Fines,
     Symp., Hyderabad, India, 1961 (1963), 1, 424-31
DT   Journal
LA   Unavailable
CC   26 (Coal and Coal Derivatives)
AB   The semicoke can be used as smokeless domestic fuel in place of
     charcoal.  About 75-85% of the potential heat in the raw coal can be
     recovered in the form of semicoke, tar, and excess gas after meeting the
     heat requirements of the process.  A min. temp. of 600° is
     necessary to assure the production of a semicoke that will not produce
     smoke when burnt on an open grate.  The lighting time for a semicoke
     produced at 550° was 30% less than that of a semicoke produced at
     650°.  The 650° semicokes had 1-in. shatter indexes of
     64-84%.  The S contents of the heavy and light tars were 0.27-0.38 wt. %.
     Distn. of the tars up to 355° produced 29-95.6 vol. % distillates
     and 28-40 vol. % tar acids in the distillates.  The aq. liquors produced
     contained 4.77-13.61 g./l. free NH3, 1.87-5.49 g./l. fixed NH3, and
     4.97-6.91 g./l. tar acids.  The high yield of tar acids is attributed to
     the highly oxygenated nature of the coals.  The calorific value of the
     excess gas ranged from 96-148 B.t.u./cu. ft. due to inert gas contents of
     77.3-85.5 vol. %.
IT   Gas, fuel (manufactured)
        (by carbonization of noncaking and weakly caking coal
        by Lurgi-Spuelgas process)
IT   Tar
        (low-temp., from noncaking and weakly caking coal
        carbonized by Lurgi-Spuelgas process)
IT   Coke
        (semi- or low-temp., from noncaking and weakly caking
        coal)

L9   ANSWER 2 OF 9  CAPLUS  COPYRIGHT 2004 ACS on STN
Full Text   Citing References
AN   1964:468320  CAPLUS
DN   61:68320
OREF 61:11809a-c
ED   Entered STN:  22 Apr 2001
TI   Pilot-plant studies on low-temperature carbonization of Indian coals. I.
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Lurgi-Spuelgas process and operational data
AU Rangrez, K. G.; Krishna, M. G.; Chowdhury, G. S.; Zaheer, S. H.
CS Regional Res. Lab., Hyderabad
SO Low-Temp. Carbonization Non-Caking Coals Lignites Briquett. Coal Fines, Symp., Hyderabad, India, 1961 (1963), 1, 411-23
DT Journal
LA Unavailable
CC 26 (Coal and Coal Derivatives)
AB Data on the low-temp. carbonization of 6 noncaking and weakly **caking coals** are presented. A clean **smokeless** fuel for open-grates was produced at 650-750° in the Lurgi-Spuelgas-type carbonizer. The semicoke burned in an open-grate without any smoke or odor and was strong enough to withstand handling and transportation. The studies established the economic feasibility of large-scale low-temp. carbonization in India. For each ton of feed coal, the gas consumption varied from 1153 to 1274 cu. m. The pilot plant, based on the Lurgi-Spuelgas interval-heating system, has a daily capacity of 25 tons of 30-80 mm. coal. The main plant comprises a vertical shaft having a drying zone at the top, a carbonizing zone in the middle, and a semi coke cooling zone at the bottom; and a condensation system consisting of a precooler, a tar separator, and a pipe cooler. The integral parts of the carbonizer can withstand temps. ≥1000°. At carbonization temps of 640-750°, the yield of **products** in wt. % for the 6 coals studied were: semicoke 62.3-73.0, heavy tar 3.20-4.53, and light tar 2.02-5.36. Surplus gas varied from 87-188 m.3/ton of coal feed.
IT Carbonization
(low-temp. and/or semi-, of noncaking and weakly **caking coal** by Lurgi-Spuelgas process)

L9 ANSWER 3 OF 9 CAPLUS COPYRIGHT 2004 ACS on STN

Full Text | Citing References

AN 1935:49203 CAPLUS
DN 29:49203
OREF 29:6392h-i,6393a-c
ED Entered STN: 16 Dec 2001
TI Recent experiments at the Fuels Research Station upon production of solid **smokeless** fuel
AU Shaw, J. Fraser; King, J. G.
SO Gas Journal (1934), 206;207, 779-82;39
CODEN: GASJAF; ISSN: 0016-4941
DT Journal
LA Unavailable
CC 21 (Fuels, Gas, Tar, and Coke)
AB The retort of the Fuel Research Station is described. Rate of heat transfer through the coal at the top of the retort decreases with increase of caking power. Decrease of size of coal is equiv. in temp. control to an increase in caking power. The change from medium caking nuts to 3/4-in. slack is approx. equiv. to change from medium to strongly caking nuts. Data on carbonization yields and properties of **products** obtained under various conditions are compared. Lump coke decreased in combustibility with increasing throughput. There is a general decrease of ease of ignition and combustibility as caking power increases. Carbonization yields from air dry (I) and wetted (II) coal are compared. Coke and tar yields are higher for I for both coals; gas amt., cal. value and therms are less for I for 1 coal and less for II for the other. Variation in gas and tar yields and compn. with type and size of coal is discussed. The greater the percentage tar yield in the retort is of the yield in the Gray-King assay, the lighter is the tar. For all tests breeze was 9-18%. The shatter tests are very uniform. Friability as shown by the tumbler test increases slightly as the caking power of the coal increases and as the size decreases. Fuel requirements were 19.5-28.0 therms per ton of coal; it is least with sized coal of low coking power and greatest with **caking coals** of small size. Preheating

air reduces fuel requirements 10%. Yields and properties of **products** from carbonization of Silkstone and High Delf coal in Woodall-Duckham chamber ovens are given. The throughput is less than in the F. R. B. retort, but the bulk density of the coke is higher and the strength of the coke is greater; with suitable blends the fuel is almost as combustible as that from the F. R. B. retort.

IT Carbonization
IT Tar
    (from dry and from wetted coals)
IT Coal
    (in **smokeless**-fuel production)
IT Gas, illuminating and fuel
    (retorts, of Fuel Research Station)
IT Fuels
    (**smokeless**, manuf. of)

L9 ANSWER 4 OF 9 CAPLUS COPYRIGHT 2004 ACS on STN

Full Text | Citing References

AN 1935:49202 CAPLUS
DN 29:49202
OREF 29:6392h-i,6393a-c
ED Entered STN: 16 Dec 2001
TI Recent experiments at the Fuels Research Station upon production of solid **smokeless** fuel
AU Shaw, J. Fraser; King, J. G.
SO Gas World (1934), 100;101, 614-17,670-2;59
    CODEN: GAWOAG; ISSN: 0016-5026
DT Journal
LA Unavailable
CC 21 (Fuels, Gas, Tar, and Coke)
AB The retort of the Fuel Research Station is described. Rate of heat transfer through the coal at the top of the retort decreases with increase of caking power. Decrease of size of coal is equiv. in temp. control to an increase in caking power. The change from medium caking nuts to 3/4-in. slack is approx. equiv. to change from medium to strongly caking nuts. Data on carbonization yields and properties of **products** obtained under various conditions are compared. Lump coke decreased in combustibility with increasing throughput. There is a general decrease of ease of ignition and combustibility as caking power increases. Carbonization yields from air dry (I) and wetted (II) coal are compared. Coke and tar yields are higher for I for both coals; gas amt., cal. value and therms are less for I for 1 coal and less for II for the other. Variation in gas and tar yields and compn. with type and size of coal is discussed. The greater the percentage tar yield in the retort is of the yield in the Gray-King assay, the lighter is the tar. For all tests breeze was 9-18%. The shatter tests are very uniform. Friability as shown by the tumbler test increases slightly as the caking power of the coal increases and as the size decreases. Fuel requirements were 19.5-28.0 therms per ton of coal; it is least with sized coal of low coking power and greatest with **caking coals** of small size. Preheating air reduces fuel requirements 10%. Yields and properties of **products** from carbonization of Silkstone and High Delf coal in Woodall-Duckham chamber ovens are given. The throughput is less than in the F. R. B. retort, but the bulk density of the coke is higher and the strength of the coke is greater; with suitable blends the fuel is almost as combustible as that from the F. R. B. retort.

IT Carbonization
IT Tar
    (from dry and from wetted coals)
IT Coal
    (in **smokeless**-fuel production)
IT Gas, illuminating and fuel
    (retorts, of Fuel Research Station)

IT Fuels
(**smokeless**, manuf. of)

L9 ANSWER 5 OF 9 CAPLUS COPYRIGHT 2004 ACS on STN

Full Text Citing References

AN 1935:49201 CAPLUS
DN 29:49201
OREF 29:6392h-i,6393a-c
ED Entered STN: 16 Dec 2001
TI Recent experiments at the Fuels Research Station upon production of solid **smokeless** fuel
AU Shaw, J. Fraser; King, J. G.
SO Inst. Gas Engrs. Communication (1934), No. 88, 46 pp.
DT Journal
LA Unavailable
CC 21 (Fuels, Gas, Tar, and Coke)
AB The retort of the Fuel Research Station is described. Rate of heat transfer through the coal at the top of the retort decreases with increase of caking power. Decrease of size of coal is equiv. in temp. control to an increase in caking power. The change from medium caking nuts to 3/4-in. slack is approx. equiv. to change from medium to strongly caking nuts. Data on carbonization yields and properties of **products** obtained under various conditions are compared. Lump coke decreased in combustibility with increasing throughput. There is a general decrease of ease of ignition and combustibility as caking power increases. Carbonization yields from air dry (I) and wetted (II) coal are compared. Coke and tar yields are higher for I for both coals; gas amt., cal. value and therms are less for I for 1 coal and less for II for the other. Variation in gas and tar yields and compn. with type and size of coal is discussed. The greater the percentage tar yield in the retort is of the yield in the Gray-King assay, the lighter is the tar. For all tests breeze was 9-18%. The shatter tests are very uniform. Friability as shown by the tumbler test increases slightly as the caking power of the coal increases and as the size decreases. Fuel requirements were 19.5-28.0 therms per ton of coal; it is least with sized coal of low coking power and greatest with **caking coals** of small size. Preheating air reduces fuel requirements 10%. Yields and properties of **products** from carbonization of Silkstone and High Delf coal in Woodall-Duckham chamber ovens are given. The throughput is less than in the F. R. B. retort, but the bulk density of the coke is higher and the strength of the coke is greater; with suitable blends the fuel is almost as combustible as that from the F. R. B. retort.
IT Carbonization
IT Tar
(from dry and from wetted coals)
IT Coal
(in **smokeless**-fuel production)
IT Gas, illuminating and fuel
(retorts, of Fuel Research Station)
IT Fuels
(**smokeless**, manuf. of)

L9 ANSWER 6 OF 9 CAPLUS COPYRIGHT 2004 ACS on STN

Full Text Citing References

AN 1923:23738 CAPLUS
DN 17:23738
OREF 17:3594i,3595a-b
ED Entered STN: 16 Dec 2001
TI Low-temperature carbonization in vertical retorts
AU Anon.
SO Gas Journal (1923), 163, 581-2
CODEN: GASJAF; ISSN: 0016-4941

DT Journal
LA Unavailable
CC 21 (Fuels, Gas, Tar, and Coke)
AB Tests were carried out on Glover-West vertical retorts at an av. temp. of 780° with a 60-40% mixt. of caking and non-**caking coals** with 0, 7.24, 13.47 and 20%, resp., of steam. The retorts were not adapted to low-temp. carbonization, yet the results showed that if a setting of similar construction with Fe retorts should be used, it should be possible successfully to manuf. a good **smokeless** fuel by this method of carbonization. The yields of by-**products** were as follows: with 0, 7.24, 13.47 and 20%, resp., the gas make was 7190,6700, 7350 and 7750 cu. ft. per ton; gross calorific value 640, 671, 661, and 640 B.t.u., the gas differing from the usual low-temp. gas in having a much lower % of unsatd. hydrocarbons, nearly twice as much H, and a much lower amt. of satd. hydrocarbons; tar 12.72, 14.18, 15.22 and 16.62 gal.; $(NH_4)_2SO_4$ 21.4, 20.6, 18.05 and 28.2 lbs. The heat required varied from 6.3 therms with 0, to 5.3 therms with 7.24% steam and to 12.4 therms with 20% steam.
IT Carbonization
(low-temp., in vertical retorts)
IT 7727-37-9, Nitrogen
(in coal distn. **products** from vertical retorts, distribution of)
IT 110-86-1, Pyridine
(in coal-distn. **products** from vertical retorts)

L9 ANSWER 7 OF 9 CAPLUS COPYRIGHT 2004 ACS on STN

Full Text | Citing References

AN 1923:23737 CAPLUS
DN 17:23737
OREF 17:3594i,3595a-b
ED Entered STN: 16 Dec 2001
TI Low-temperature carbonization in vertical retorts
AU Anon.
SO Gas World (1923), 79, 130-41
CODEN: GAWOAG; ISSN: 0016-5026
DT Journal
LA Unavailable
CC 21 (Fuels, Gas, Tar, and Coke)
AB Tests were carried out on Glover-West vertical retorts at an av. temp. of 780° with a 60-40% mixt. of caking and non-**caking coals** with 0, 7.24, 13.47 and 20%, resp., of steam. The retorts were not adapted to low-temp. carbonization, yet the results showed that if a setting of similar construction with Fe retorts should be used, it should be possible successfully to manuf. a good **smokeless** fuel by this method of carbonization. The yields of by-**products** were as follows: with 0, 7.24, 13.47 and 20%, resp., the gas make was 7190,6700, 7350 and 7750 cu. ft. per ton; gross calorific value 640, 671, 661, and 640 B.t.u., the gas differing from the usual low-temp. gas in having a much lower % of unsatd. hydrocarbons, nearly twice as much H, and a much lower amt. of satd. hydrocarbons; tar 12.72, 14.18, 15.22 and 16.62 gal.; $(NH_4)_2SO_4$ 21.4, 20.6, 18.05 and 28.2 lbs. The heat required varied from 6.3 therms with 0, to 5.3 therms with 7.24% steam and to 12.4 therms with 20% steam.
IT Carbonization
(low-temp., in vertical retorts)
IT 7727-37-9, Nitrogen
(in coal distn. **products** from vertical retorts, distribution of)
IT 110-86-1, Pyridine
(in coal-distn. **products** from vertical retorts)

L9 ANSWER 8 OF 9 CAPLUS COPYRIGHT 2004 ACS on STN

Full Text | Citing References

AN 1923:23736 CAPLUS
DN 17:23736
OREF 17:3594i,3595a-b
ED Entered STN: 16 Dec 2001
TI Low-temperature carbonization in vertical retorts
AU Anon.
SO Fuel Research Board, Tech. Paper (1923), No. 7,
DT Journal
LA Unavailable
CC 21 (Fuels, Gas, Tar, and Coke)
AB Tests were carried out on Glover-West vertical retorts at an av. temp. of 780° with a 60-40% mixt. of caking and non-**caking coals** with 0, 7.24, 13.47 and 20%, resp., of steam. The retorts were not adapted to low-temp. carbonization, yet the results showed that if a setting of similar construction with Fe retorts should be used, it should be possible successfully to manuf. a good **smokeless** fuel by this method of carbonization. The yields of by-**products** were as follows: with 0, 7.24, 13.47 and 20%, resp., the gas make was 7190,6700, 7350 and 7750 cu. ft. per ton; gross calorific value 640, 671, 661, and 640 B.t.u., the gas differing from the usual low-temp. gas in having a much lower % of unsatd. hydrocarbons, nearly twice as much H, and a much lower amt. of satd. hydrocarbons; tar 12.72, 14.18, 15.22 and 16.62 gal.; $(NH_4)_2SO_4$ 21.4, 20.6, 18.05 and 28.2 lbs. The heat required varied from 6.3 therms with 0, to 5.3 therms with 7.24% steam and to 12.4 therms with 20% steam.
IT Carbonization
(low-temp., in vertical retorts)
IT 7727-37-9, Nitrogen
(in coal distn. **products** from vertical retorts, distribution of)
IT 110-86-1, Pyridine
(in coal-distn. **products** from vertical retorts)

L9 ANSWER 9 OF 9 CAPLUS COPYRIGHT 2004 ACS on STN

Full Text | Citing References

AN 1919:6152 CAPLUS
DN 13:6152
OREF 13:1141h-i,1142a-f
ED Entered STN: 16 Dec 2001
TI Low-temperature carbonization in relation to the production of motor spirit, fuel oils, **smokeless** fuel and power gas: its aims and objectives
AU Marshall, F. D.
SO Gas Journal (1919), 145, 383-5,451-4
CODEN: GASJAF; ISSN: 0016-4941
DT Journal
LA Unavailable
CC 21 (Fuels, Gas, Tar, and Coke)
AB M. proposes to reduce the abnormal waste in utilizing fuel by subjecting it to the following cycle of operations: (1) Carbonization of the raw coal at a low temp. and recovery of the liquid **products** and a portion of the NH_3; (2) gasification of the resultant coke into producer gas with recovery of the bulk of the NH_3; each ton of coke will yield 120,000-140,000 cu. ft. of gas with a calorific value of 120-130 B. t. u. per cu. ft.; (3)conversion of the power gas into electricity; 110 cu. ft. of 130 B. t. u. gas will develop in good engines 1 kw. hr., and if for raising steam, 200 cu. ft. will develop 1 kw. hr. in efficient steam turbines. An av. coal when submitted to a high temp. in the retorts of 2000-2200° F. will yield approx. per ton: gas 12,000-13,000 cu. ft. of approx. 500 B. t. u., coke 66%, tar 9-10 gals., $(NH_4)_2SO_4$ 20-28 lbs.; to a low temp. of 900-1200° F.: gas 4000-6000 cu. ft. of approx. 650 B. t. u., coke 70-75%, tar oils 18-22 gals., sulfate 15-22 lbs. Solid, compact and transportable low-temp. coke can be produced by confining the coal in comparatively narrow chambers with walls sufficiently strong to withstand the pressure of expansion of the coke.

Under the low temp., a swelling coke will reach its max. of expansion in about 3.5 hrs. and will then shrink to allow of easy discharge. Such coke will also contain a residue of 9-12% of volatile matter which makes it easily ignitable and satisfactory for fuel. Its calorific value compared with good coal is 13,300 B. t. u., coal being 14,200 B. t. u. Low-temp. gas varies in thermal value from 550 to 650 B. t. u. before washing, after washing 400-450 B. t. u. Low-temp. carbonization of an ordinary bituminous coal gave results per ton as follows: Coke 75% containing 9% inflammable gas, very hard and dense; crude oils, water free 22 gals, sp. gr. 1.06; ammoniacal liquor, 9.5%; motor spirit, 3.94 gals.; pitch, 23%; ash in coke, 10.3%. Cannel coal gave results as follows: Coke, 70%, poor for domestic purposes but good for producer gas; ash in coke, 20.4%; crude oils, 53.5 gals.; ammoniacal liquor, 0.5%; pitch, 29%; motor spirit, 8.75 gals. The process described is the Tozer process, originally devized by the Tarless Fuel Syndicate. It consists in distributing the coal in thin layers in the form of a circle in such a way that a charge of 20-25 cwt. of coal can be carbonized in 4.5 hrs. The retort is constructed with 2 annular sections, one disposed concentrically within the other, the exterior heat being conducted through the first annulus of coal to the second by ribs which divide the annuli into vertical cells, advantage being taken of the conductivity of the cast iron of which the retort is built. The inner tube formed by the surrounding annuli is not filled with coal, but acts as a gas passage connecting the upper and lower ends of the retort. The retort will deal with practically every kind of carbonaceous material, caking and non-**caking coals**, shales, lignites and peat, in every physical condition from 3-in. down to dust, and will carbonize and produce coke from colliery slack and washings. The retorts are heated by a specially designed recuperative setting.

```
IT   Gas
        (illuminating and fuel, from low-temp. carbonization)
IT   Gas
        (illuminating and fuel, gasoline detn. in)
IT   Fuels
        (internal-combustion, from low-temp. carbonization)
IT   Carbonization
        (low-temp.)
```

=> s ca2313882/pn

```
L10           0 CA2313882/PN
```

=> s ca2313882/pa

```
L11           0 CA2313882/PA
```

=> s ca2313882

```
L12           0 CA2313882
```

=> s goraczko

```
              0 GORACZKO
L13           0 GORACZKO
```

=> s valorization

```
            281 VALORIZATION
              2 VALORIZATIONS
L14         283 VALORIZATION
                  (VALORIZATION OR VALORIZATIONS)
```

=> s l14 and coal

```
         209512 COAL
          35522 COALS
         211340 COAL
                  (COAL OR COALS)
L15          17 L14 AND COAL
```

```
=> d l15 1-17 ti

L15  ANSWER 1 OF 17  CAPLUS  COPYRIGHT 2004 ACS on STN
Citing References
TI   Life cycle assessment of coal by-products based electric power
     production scenarios

L15  ANSWER 2 OF 17  CAPLUS  COPYRIGHT 2004 ACS on STN
Citing References
TI   Use of wastes in glasses, glass-ceramics and ceramics

L15  ANSWER 3 OF 17  CAPLUS  COPYRIGHT 2004 ACS on STN
Citing References
TI   Valorization of textile sludges

L15  ANSWER 4 OF 17  CAPLUS  COPYRIGHT 2004 ACS on STN
Citing References
TI   Rheology and pipeline transport of combustible pulps

L15  ANSWER 5 OF 17  CAPLUS  COPYRIGHT 2004 ACS on STN
Citing References
TI   Optimization of combustion of coal-washery products which are difficult
     for valorization

L15  ANSWER 6 OF 17  CAPLUS  COPYRIGHT 2004 ACS on STN
Citing References
TI   Quality control and industrial reutilization potential of FGD gypsum

L15  ANSWER 7 OF 17  CAPLUS  COPYRIGHT 2004 ACS on STN
Citing References
TI   Upgrading of waste derived solid fuel by steam gasification

L15  ANSWER 8 OF 17  CAPLUS  COPYRIGHT 2004 ACS on STN
Citing References
TI   Scrap tire pyrolysis: Are the effluents valuable products?

L15  ANSWER 9 OF 17  CAPLUS  COPYRIGHT 2004 ACS on STN
Citing References
TI   The valorization of carbon containing wastes in classical coking plants

L15  ANSWER 10 OF 17  CAPLUS  COPYRIGHT 2004 ACS on STN
Citing References
TI   Ultrasonic removal of heavy metals and pyrolytic valorization of waste
     oils

L15  ANSWER 11 OF 17  CAPLUS  COPYRIGHT 2004 ACS on STN
Citing References
TI   Thermal byproducts treatment and valorization

L15  ANSWER 12 OF 17  CAPLUS  COPYRIGHT 2004 ACS on STN
Citing References
TI   Multinutrient fertilizer
```

L15 ANSWER 13 OF 17 CAPLUS COPYRIGHT 2004 ACS on STN
Citing References
TI **Valorization** of waste mining products by vitrification

L15 ANSWER 14 OF 17 CAPLUS COPYRIGHT 2004 ACS on STN
Citing References
TI Aspects of the chemical **valorization** of **coal**

L15 ANSWER 15 OF 17 CAPLUS COPYRIGHT 2004 ACS on STN
Citing References
TI Aspects of the chemical **valorization** of **coal** gases in Belgium

L15 ANSWER 16 OF 17 CAPLUS COPYRIGHT 2004 ACS on STN
Citing References
TI Aspects of the chemical **valorization** of **coal** gases in Belgium

L15 ANSWER 17 OF 17 CAPLUS COPYRIGHT 2004 ACS on STN
Citing References
TI **Valorization** of mined fuels

=> **dl15 13-17 all**
DL15 IS NOT A RECOGNIZED COMMAND
The previous command name entered was not recognized by the system.
For a list of commands available to you in the current file, enter
"HELP COMMANDS" at an arrow prompt (=>).

=> **d l15 13-17 all**

L15 ANSWER 13 OF 17 CAPLUS COPYRIGHT 2004 ACS on STN
Full Text Citing References
AN 1971:452305 CAPLUS
DN 75:52305
ED Entered STN: 12 May 1984
TI **Valorization** of waste mining products by vitrification
AU Santt, Rene
CS Fr.
SO Annales des Mines (1971), (March), 43-56
CODEN: ANMSA3; ISSN: 0003-4282
DT Journal
LA French
CC 57 (Ceramics)
AB Wastes from **coal** and iron mines can be saved by vitrification. The resulting product is glass. This black glass turns opaque during the vitrification process because of the Fe content Proper thermal treatment of this glass causes small crystals to form in the mass giving a vitreous ceramic. Glass designation 195 has the best velocity of recrystn. and it resists thermal shock very well. The compn. of this glass is SiO_2 42.25, Al_2O_3 5.84, Fe_2O_3 17.64, CaO 24.04, MgO 0.59, MnO 0.15, Na_2O 5.91, and CaF_2 0.68%.
ST glass **coal** iron mine waste; **coal** mine waste glass; iron mine waste glass
IT Glass ceramics
Glass
RL: USES (Uses)
(opaque, from mine wastes)
IT Mines
(wastes from, black glass from)
IT 1309-37-1, uses and miscellaneous 1344-43-0 7789-75-5, uses and

miscellaneous
RL: USES (Uses)
(glass, opaque, from mine wastes)

L15 ANSWER 14 OF 17 CAPLUS COPYRIGHT 2004 ACS on STN

Full Text | Citing References

AN 1950:25919 CAPLUS
DN 44:25919
OREF 44:5077g
ED Entered STN: 22 Apr 2001
TI Aspects of the chemical **valorization** of **coal**
AU Ferrero, P.
SO Exp. nat. ind. chim. Charleroi (1945) 58-63
DT Journal
LA Unavailable
CC 21 (Fuels and Carbonization Products)
AB cf. C.A. 43, 8118i. The potentialities of **coal** as a source of raw materials are described.
IT **Coal**
(as chemical source)
IT Chemicals
(from **coal**, evaluation of)

L15 ANSWER 15 OF 17 CAPLUS COPYRIGHT 2004 ACS on STN

Full Text | Citing References

AN 1949:45112 CAPLUS
DN 43:45112
OREF 43:8118i,8119a
ED Entered STN: 22 Apr 2001
TI Aspects of the chemical **valorization** of **coal** gases in Belgium
AU Ferrero, Paul
SO Gas Journal (1949), 259, 105-6
CODEN: GASJAF; ISSN: 0016-4941
DT Journal
LA Unavailable
CC 21 (Fuels and Carbonization Products)
AB H was first recovered from **coal** gas for use in the synthesis of NH3. CH4 is used in part for the prepn. of make-up H or for synthesis gas to be converted into CH3OH. C2H4 is useful for the synthesis of a no. of chemicals.
IT Fuel gas
(as chemical raw material)
IT 74-82-8, Methane
(recovery from **coal** gas and use of)
IT 74-85-1, Ethylene
(recovery of, from **coal** gas)
IT 1333-74-0, Hydrogen
(recovery of, from coke-oven gas)

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Full Text | Citing References

AN 1949:45111 CAPLUS
DN 43:45111
OREF 43:8118i,8119a
ED Entered STN: 22 Apr 2001
TI Aspects of the chemical **valorization** of **coal** gases in Belgium
AU Ferrero, Paul
SO Gas World (1949), 130, 1066
CODEN: GAWOAG; ISSN: 0016-5026
DT Journal
LA Unavailable

```
CC   21 (Fuels and Carbonization Products)
AB   H was first recovered from coal gas for use in the synthesis of NH3.
     CH4 is used in part for the prepn. of make-up H or for synthesis gas to be
     converted into CH3OH.  C2H4 is useful for the synthesis of a no. of
     chemicals.
IT   Fuel gas
        (as chemical raw material)
IT   74-82-8, Methane
        (recovery from coal gas and use of)
IT   74-85-1, Ethylene
        (recovery of, from coal gas)
IT   1333-74-0, Hydrogen
        (recovery of, from coke-oven gas)

L15  ANSWER 17 OF 17  CAPLUS  COPYRIGHT 2004 ACS on STN
Full Text   Citing References
AN   1928:39699  CAPLUS
DN   22:39699
OREF 22:4758f-g
ED   Entered STN:  16 Dec 2001
TI   Valorization of mined fuels
AU   Folliet, A.
SO   Revue de Chimie Industrielle et le Moniteur Scientifique de Quesneville
     Reunis (Paris) (1928), 37, 182-6
     CODEN: RCHJAR
DT   Journal
LA   Unavailable
CC   21 (Fuels, Gas, Tar, and Coke)
AB   A review of the different furnaces used in the low-temp. distn. of coal.
IT   Furnace
        (distn., for coal at low-temps.)
IT   Fuels
        (liquid)
IT   Carbonization
        (low-temp.)
IT   Fuels
        (valorization of mined)


=> log y
COST IN U.S. DOLLARS                              SINCE FILE     TOTAL
                                                       ENTRY   SESSION
FULL ESTIMATED COST                                   121.06    191.63

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)        SINCE FILE     TOTAL
                                                       ENTRY   SESSION
CA SUBSCRIBER PRICE                                   -18.20    -31.50

STN INTERNATIONAL LOGOFF AT 08:55:18 ON 14 SEP 2004
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